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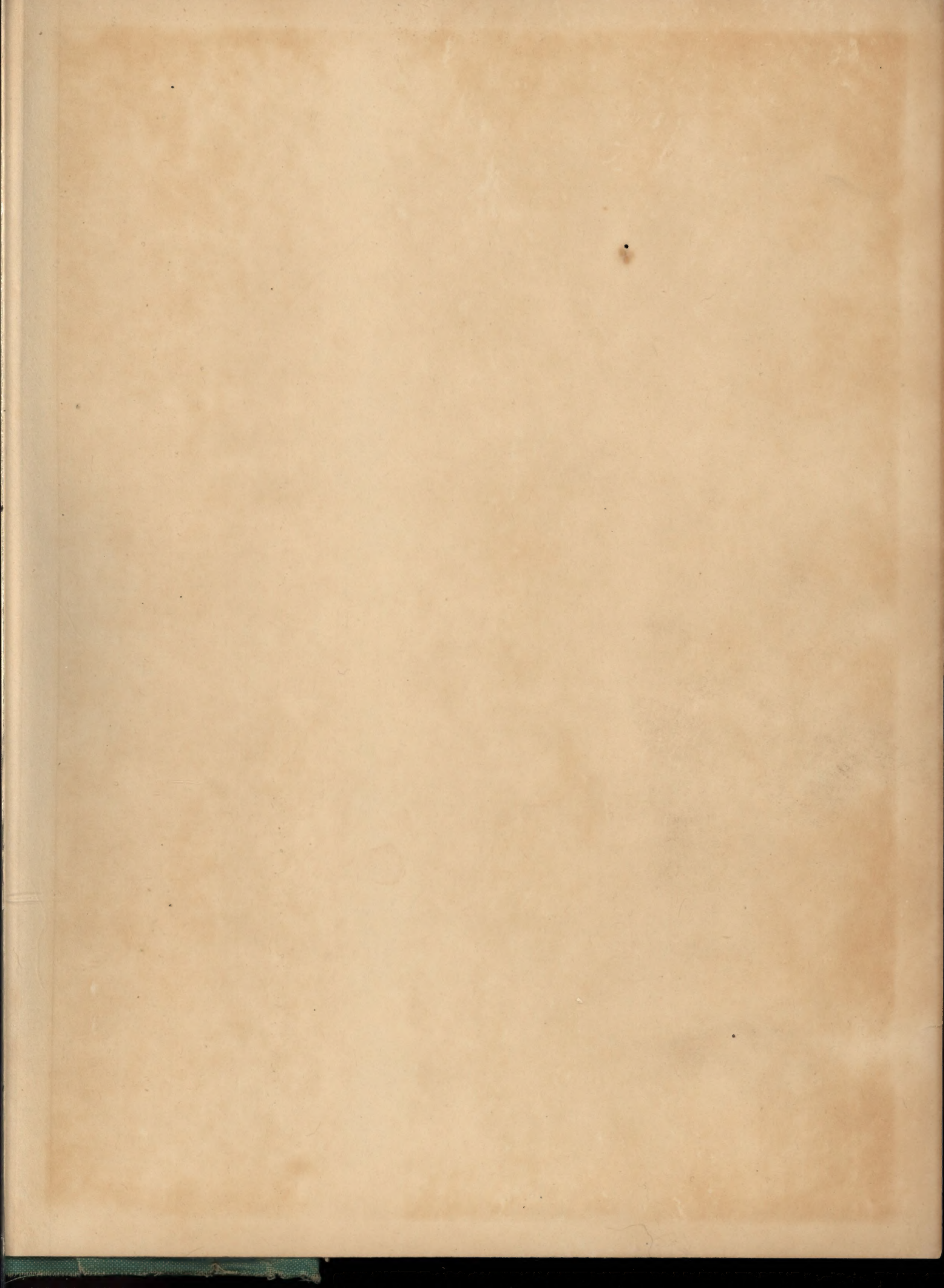
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SWEET'S CATALOG FILE

A File of Manufacturers' Catalogs designed for the use of Architects, Engineers, Contractors and others whose practice it is to select, specify or purchase building materials, equipment and allied services.

SWEET'S CATALOG SERVICE

DIVISION OF F. W. DODGE CORPORATION
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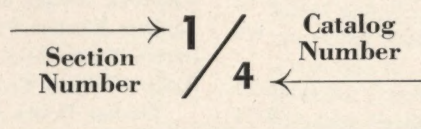
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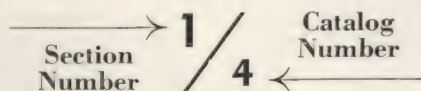
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Furniture

Kamrass, H., & Son, Inc. 21/27
Russ Soda Fountain Co. 22/22

Racks—Steel

See 21/12

Service Units

See Service Units—Beer

Tops—Phenolic Fiber

See Panels—Phenolic Fiber

Barn

Equipment

Louden Machinery Co. 23/39
See also 24/32

Barrels

Deep Well

See Pumps—Deep Well

Storage Racks for

See Racks—Barrel Storage

Bars

Binding—Floor and Cove Base

Manhattan Terrazzo Brass Strip Co., Inc. 14/5

Binding—Floor Covering

American Mason Safety Tread Co. 6/8
Mason 6/8
Security 6/13
Universal Safety Tread, Inc. 6/14
Vogeliner Co. 15/13
Wooster Products, Inc. 6/13
See also 19/17
Specifications 15/13

Curb

American Brake Shoe and Foundry Co. 6/2
Concrete Steel Co. 3/47

Door—Push

See 17/16

Metal

See Rods and Bars

Reinforcing

Bethlehem 3/50
Ceco 3/69
Concrete Engineering Co., Inc. 3/69
Concrete Steel Co. 3/47
J & L 5/6
Jones & Laughlin Steel Corp. 5/6
Kalman Steel Corp. 3/50
Ryerson, Joseph T., & Son, Inc. 3/51
Truscon Steel Co. 11/12
See also 2/1

Ties, Spacers, Hangers, etc., for

See Bars—Reinforcing

Bas Reliefs

Bronze

See Ornamental—Metal Work; Tablets—Bronze, Brass,
Aluminum; Statuary—Metal

Base

Beads

See Beads—Base; Beads—Base—Metal Strips for Ter-
razzo Floor

Board—Shoes

See Shoes—Baseboard

Board Shoes—Round Corners for

See Shoes—Baseboard—Round Corners for

Base—Cont.

Combined with Electrical Distribution System—Metal

Conduo-Base 10/3; 20/3; 27/1
Dahlstrom Metallic Door Co. 27/1
Knapp Bros. Mfg. Co. 14/6
Wyr-Way 14/6
Specifications 27/1

Cove

See Cove—Base

Metal

See Cove Base—Metal

Screeds and Grounds—Metal

Ceco 3/69
Concrete Steel Co. 3/47
J & L 5/6
Jones & Laughlin Steel Corp. 5/6
Knapp Bros. Mfg. Co. 14/6
Milcor Steel Co. 14/7
Old Style 14/7
Penco 14/11
Penmetal 14/11
Penn Metal Co. 14/11
Red Top 14/9
Richsto Metal Trim Co., Div. of Milcor Steel Co. 14/7
Truscon Steel Co. 11/12
United States Gypsum Co. 14/9
See also 3/51; 14/2; 14/3; 14/13
Specifications 14/9

Screeds and Grounds—Plastic—Colored

Vogeliner Co. 15/13
Specifications 15/13

Stucco or Plaster

See Boards—Stucco; Metal Lath; Metal Lath and Insu-
lation—Combination; Plaster—Board—Gypsum

Wall

See Cove Base; Treads; Flooring

Bases

Flag Pole

See Flag Pole—Bases

Post

See Caps and Bases—Post

Ventilator—Roof

See Ventilator—Bases

Basins

Gravel

See Catchbasins

Pump and Blow-off

See 24/28

Wash

See Lavatories

Basket

Ball—Backstops

Medart, Fred, Mfg. Co. 23/25

Racks

See Racks—Basket

Bathroom Accessories

Cabinets

Acme Metal Products Corp. 25/29
Associated Manufacturers of "Bilt-Well" Mill-
work 22/2
Carey 25/37
Columbia Metal Box Co. 25/30
Corcoran 25/32
DeLuxe 25/29; 25/35
Empire 25/32
Evalast 25/39
Fairfacts Co., Inc. 25/31
Fries & Son Steel Construction and Engineering
Co., Inc. 25/32
Hallenscheid & McDonald 25/33
Hall-Mack 25/33
Hess Warming & Ventilating Co. 25/34
Hoegger, Inc. 25/36

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Bathroom Accessories—Cont.

Cabinets—Cont.

(Continued from Previous Page)

<i>Lawco</i>	25/35
Lawson, F. H., Co.	25/35
<i>Manhattan Tyteset</i>	25/36
Miami Cabinet Div., Philip Carey Co.	25/37
<i>Mirror-Lite</i>	25/35
Parker, Charles, Co.	25/39
<i>Perfectlite</i>	25/30
<i>Tube-O-Lite</i>	25/34
United Metal Box Co., Inc.	25/38
White Door Bed Co., Inc.	22/14
See also.	11/13; 21/29; 25/15; 26/64
Specifications	22/14

Electric Air Heaters or Radiators

See Heaters—Air—Electric; Radiators—Electric

Holders—Paper Towel or Napkin

A. P. W. Paper Co.	25/46
<i>De Luxe</i>	25/47
<i>Economy</i>	25/47
<i>No-Waste</i>	25/47
<i>Onliwon</i>	25/46
Palmer Products, Inc.	25/47
United States Quarry Tile Co.	15/7
See also.	25/44

Holders—Soap, Tumbler, Tooth Brush, Sponge, etc.

<i>Aristocrome</i>	25/33
<i>Biltin</i>	25/31
Fairfacts Co., Inc.	25/31
Hallenscheid & McDonald.	25/33
<i>Hall-Mack</i>	25/33
Hoegger, Inc.	25/36
Kraftile Co.	3/30
<i>Manhattan Tyteset</i>	25/36
Parker, Charles, Co.	25/39
<i>Royal De Luxe</i>	25/31
<i>Sanoware</i>	15/3
Sparta Ceramic Co.	15/6
<i>Spartan</i>	15/6
United States Quarry Tile Co.	15/7

Holders—Toilet Paper

A. P. W. Paper Co.	25/46
<i>Aristocrome</i>	25/33
<i>De Luxe</i>	25/47
<i>Economy</i>	25/47
Hallenscheid & McDonald.	25/33
<i>Hall-Mack</i>	25/33
Hoegger, Inc.	25/36
Kraftile Co.	3/30
<i>Manhattan Tyteset</i>	25/36
<i>No-Waste</i>	25/47
<i>Onliwon</i>	25/46
Palmer Products, Inc.	25/47
Parker, Charles, Co.	25/39
<i>Sanoware</i>	15/3
Sparta Ceramic Co.	15/6
<i>Spartan</i>	15/6
United States Quarry Tile Co.	15/7
See also.	25/44

Medicine Cabinets

See Cabinets—Bathroom; Cabinets—Hospital; Bathroom Accessories—Cabinet

Mirrors

<i>Blue Glass</i>	17/1
<i>Carey</i>	25/37
<i>Crystalex</i>	17/1
<i>Flesh-Tinted</i>	17/1
<i>Gold</i>	17/1
<i>Gun Metal</i>	17/1
Hess Warming & Ventilating Co.	25/34
Hoegger, Inc.	25/36
<i>L-O-F</i>	17/4
<i>Lawco</i>	25/35
Lawson, F. H., Co.	25/35
Libbey-Owens Ford Glass Co.	17/4
<i>Manhattan Tyteset</i>	25/36
Miami Cabinet Div., Philip Carey Co.	25/37
Parker, Charles, Co.	25/39
<i>Pittsburgh Copper Back</i>	17/1
<i>Pittsburgh Plate Glass Co.</i>	17/1
See also.	11/13; 22/2; 22/14; 25/31; 25/32
Specifications	17/1

Bathroom Accessories—Cont.

Robe Hooks

<i>Aristocrome</i>	25/33
Hallenscheid & McDonald.	25/33
<i>Hall-Mack</i>	25/33
Hoegger, Inc.	25/36
Kraftile Co.	3/30
<i>Manhattan Tyteset</i>	25/36
Parker, Charles, Co.	25/39
<i>Sanoware</i>	15/3
Sparta Ceramic Co.	15/6
<i>Spartan</i>	15/6
United States Quarry Tile Co.	15/7

Seats—Bathtub

Hoegger, Inc.	25/36
<i>Manhattan Tyteset</i>	25/36

Shelves

<i>Aristocrome</i>	25/33
Fairfacts Co., Inc.	25/31
Formica Insulation Co.	15/15
Hallenscheid & McDonald.	25/33
<i>Hall-Mack</i>	25/33
Hoegger, Inc.	25/36
<i>Manhattan Tyteset</i>	25/36
Parker, Charles, Co.	25/39
<i>Sanoware</i>	15/3
United States Quarry Tile Co.	15/7

Strop Hooks

<i>Aristocrome</i>	25/33
Hallenscheid & McDonald.	25/33
<i>Hall-Mack</i>	25/33
Hoegger, Inc.	25/36
<i>Manhattan Tyteset</i>	25/36
Parker, Charles, Co.	25/39
<i>Sanoware</i>	15/3
United States Quarry Tile Co.	15/7

Towel Bars or Racks, Grab Rails, etc.

<i>Aristocrome</i>	25/33
Fairfacts Co., Inc.	25/31
Hallenscheid & McDonald.	25/33
<i>Hall-Mack</i>	25/33
<i>Handirack</i>	25/16
Hoegger, Inc.	25/36
Kraftile Co.	3/30
Lehman Sprayshield Co.	25/16
<i>Manhattan Tyteset</i>	25/36
<i>Non-slip</i>	25/31
Parker, Charles, Co.	25/39
<i>Sanoware</i>	15/3
Sparta Ceramic Co.	15/6
<i>Spartan</i>	15/6
United States Quarry Tile Co.	15/7

Towel Baskets

Hoegger, Inc.	25/36
<i>Manhattan Tyteset</i>	25/36
Parker, Charles, Co.	25/39

Baths

Bird

See Furniture—Garden

Rubber—Foot

Everson Filter Co.	23/30
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Shower—Curtain Rings for

See Curtain—Hooks

Shower or Needle

<i>Adjusta-Spray</i>	25/21
<i>All-metal</i>	20/7
<i>Anystream</i>	25/21
<i>Bathe-Rite</i>	25/17
Bradley Washfountain Co.	25/25
<i>Built-in Heavywate</i>	25/21
<i>Built-in Metaline</i>	25/21
<i>Crane Co.</i>	25/1
Fiat Metal Mfg. Co.	25/14
Mills Co.	20/7
Milwaukee Stamping Co.	25/17
<i>Mixometer</i>	25/21
<i>Niagara</i>	25/21
<i>Refreshor</i>	25/1
Speakman Co.	25/21

Baths—Cont.

Shower or Needle—Glass Shields for

See Doors—Shower Stall—Glass; Shields—Bathtub—for Showers

Shower or Needle—Stalls for

See Stalls—Shower Bath

Therapeutic

See23/27

Bathtub

Fittings

Act-Easy Pop-up25/21
Crane Co. 25/1
Deshler25/21
Dupont25/21
Speakman Co.25/21
Willard25/21

Shields for Showers

See Shields—Bathtub—for Showers

Bathtubs

Porcelain

Corwith 25/1
Crane Co. 25/1
 See also.....24/15

Batteries

Storage

Electric Storage Battery Co.27/11
Exide27/11
Keepalite27/11
 Specifications27/11

Battery

Charging Equipment

Electric Storage Battery Co.27/11

Eliminators

See Eliminators—Battery

Beacons

Airway

See Ornamental—Metal Work

Beading

Rubber—Table Tops

Goodyear Tire & Rubber Co., Inc.15/39

Beads

Base—Metal Strips for Terrazzo Floor

Knapp Bros. Mfg. Co. 14/6
Manhattan Terrazzo Brass Strip Co., Inc. 14/5

Corner—Metal

Bostwick Steel Lath Co. 14/2
Ceco 3/69
Concrete Steel Co. 3/47
Gold Bond 14/8
Goldsmith Metal Lath Co. 14/3
Knapp Bros. Mfg. Co. 14/6
Milcor Steel Co. 14/7
National Gypsum Co. 14/8
Neverbreak 14/7
Old Style 14/7
Penco 14/11
Penmetal 14/11
Penn Metal Co. 14/11
Red Top 14/9
Richsto Metal Trim Co., Div. of Milcor Steel Co. 14/7
Superior 14/7
Truscon Steel Co. 11/12
Truss-Wing 14/2
United States Gypsum Co. 14/9
 See also3/51; 14/13
 Specifications14/7; 14/9

Beam

Coverings

See Tile—Hollow Gypsum; Tile—Hollow—Clay or Terra Cotta; Metal Lath

Beam—Cont.

Hangers

See Hangers—Beams, Joist, Wall, etc.

Wrapping

See Caging—Wire—Beam and Girder; Concrete Reinforcement

Beams

Structural

See Structural—Shapes

Bed Pan

Washers and Sterilizers

See Washers; Sterilizers

Beds

Closet—Portable

Economy Roller21/29
Midwest Concealed Bed Corp.21/28
Murphy Door Bed Co.21/29
White Door Bed Co., Inc.22/14

Disappearing or Built-in

In-A-Dor 21/29
Midwest Concealed Bed Corp.21/28
Murphy Door Bed Co.21/29
White Door Bed Co., Inc.22/14

Beech

Lumber

See Lumber—Beech

Beer

Coolers

See Coolers—Beer, Milk, etc.

Bells

Church, Tower, Clock, Fire Alarm, School, Peal, etc.

Deagan, J. C., Inc.23/20
McShane Bell Foundry Co.23/21
Meneely Bell Co.23/22

Bells and Buzzers

Electric

Adaptabel 29/3
Bryant Electric Co. 29/2
Busacall29/3; 29/8
Duo-Potential 29/7
Edwards and Co., Inc. 29/3
Faraday 29/8
Flushcall29/3; 29/8
Holtzer-Cabot Electric Co.29/6
Mastercode 29/7
Melocall 29/3
Ringcall29/3; 29/8
Signal Engineering & Mfg. Co. 29/7
Standard Electric Time Co. 29/9
Stanley & Patterson, Inc. 29/8
Wheelock 29/7
 Specifications 29/3

Benches

Garden

See Furniture—Garden

Locker Room

See Lockers—Steel

Work—Steel

See21/12

Benders

Conduit

See Conduit—Electrical

Bends

Pipe

Grinnell Co., Inc.26/95
 See also.....24/40; 24/48

Binding Bars

Strips—Metal

See Edging—Floor Covering

Bins

Storage—Steel

See Shelving—Steel

Storage—Steel Plate

See Steel—Plate Construction

Wine or Bottle Storage

See Bottle—Racks; Wine—Racks

Bird

Baths

See Furniture—Garden

Blackboard

Chalk Rail Dust Cover and Eraser Cleaner

Austral Sales Corp.	18/32
Knapp Bros. Mfg. Co.	14/6
Milcor Steel Co.	14/7
Multi-Use	18/32
Rowles, E. W. A., Co.	21/23
Specifications	18/32; 21/23

Chalk Rails

Asbestos Insulating Co.	21/17
Beckley-Cardy Co.	21/19
Knapp Bros. Mfg. Co.	14/6
Masters	21/17
Milcor Steel Co.	14/7
Richsto Metal Trim Co., Div. of Milcor Steel Co.	14/7
Rowles, E. W. A., Co.	21/23
Simplex	21/19
Specifications	21/17; 21/19; 21/23

Display Rails or Racks

Day	21/20
Hammett, J. L., Co.	21/20
Knapp Bros. Mfg. Co.	14/6
Rowles, E. W. A., Co.	21/23
Webco	21/24
Specifications	21/23

Frames

Asbestos Insulating Co.	21/17
Masters	21/17
Specifications	21/17

Joining Strips

Austral Sales Corp.	18/32
Beckley-Cardy Co.	21/19
Multi-Use	18/32
Rowles, E. W. A., Co.	21/23
Simplex	21/19
W.C.	21/24
Webco	21/24
Weber Costello Co.	21/24
Specifications	18/32; 21/19; 21/23

Mouldings

Asbestos Insulating Co.	21/17
Knapp Bros. Mfg. Co.	14/6
Masters	21/17
Milcor Steel Co.	14/7
Richsto Metal Trim Co., Div. of Milcor Steel Co.	14/7
Rowles, E. W. A., Co.	21/23
Specifications	21/23

Tack Strips

(See also Boards—Bulletin)

Austral Sales Corp.	18/32
Beckley-Cardy Co.	21/19
Duplex	21/19
Multi-Use	18/32
New York Silicate Book Slate Co.	21/22
Perma Korkboard	21/23
Rowles, E. W. A., Co.	21/23
Seloc	21/22
Simplex	21/19
W.C.	21/24
Webco	21/24
Weber Costello Co.	21/24
Specifications	18/32; 21/19; 21/23

Blackboards

Composition

Beckley-Cardy Co.	21/19
Duroplate	21/23
Enduraroc	21/23
Hyloplate	21/24
New York Silicate Book Slate Co.	21/22
Old Reliable	21/24
Permaroc	21/23
Rowles, E. W. A., Co.	21/23
Slatebestos	21/19
Slaterock	21/19
Slatoplate	21/19
Sterling Lifelong	21/24
Swinging Leaf	21/24
Velvastone	21/24
Webco	21/24
Weber Costello Co.	21/24
Specifications	21/19; 21/23; 21/24

Glass

New York Silicate Book Slate Co.	21/22
Seloc	21/22
Specifications	21/22

Slate

Natural Slate Blackboard Co.	21/21
Pyramid	21/21
Specifications	21/21

Blanket

Warmers

Art Metal Construction Co.	23/16
GF	23/17

Blast

Furnaces

See Cores—Blast for Heating and Cooling

Bleacher

Deck Slabs

See Stadium—Deck Slabs

Bleachers

Seating

Gymstand	23/26
Horn Folding Partition Co.	20/21
Selfold	20/21
Wayne Iron Works	23/26
Specifications	20/21

Seating—Motor Operated

Babcock-Davis Corp.	10/13
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Blinds

Awning

Swedish Venetian Blind Co.	19/36
Wilson, J. G., Corp.	19/40

Lightproof

See Curtains—Lightproof; Shades—Lightproof

Porch

See Shades—Window, Skylight, etc.; Blinds—Venetian

Rolling—Outside

Bostwick-Goodell Co.	19/28
Swedish Venetian Blind Co.	19/36
Victoria	19/28

Venetian—Cloth

Simon Ventilighter Co., Inc.	19/35
Ventilighter	19/35

Venetian—Metal

Simon Ventilighter Co., Inc.	19/35
United Metal Blind Co., Inc.	19/37
Ventilighter	19/35

Venetian—Wood

Airflo	19/33
Aristocrat	19/31
Bostwick-Goodell Co.	19/28
Burlington Venetian Blind Co.	19/29
Color Edge	19/10
Columbia Mills, Inc.	19/30
Cooley Inc.	19/31
E-Z	19/29

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Blinds—Cont.

Venetian Wood—Cont.

(Continued from Previous Page)

Easy Lift	19/28
Higgin Mfg. Co.	19/32
Huttig Sash & Door Co. of St. Louis	19/33
Interstate Shade Cloth Co.	19/34
Pella	19/10
Rolscreen Co. of Pella, Iowa	19/10
Simon Ventilighter Co., Inc.	19/35
Swedish Venetian Blind Co.	19/36
Universal	19/34
Ventilighter	19/35
Victoria	19/28
Warren Shade Co.	19/38
Watson Mfg. Co., Inc.	19/12
Western Venetian Blind Co.	19/39
Wilson, J. G., Corp.	19/40
Specifications	19/10; 19/30; 19/33; 19/39

Venetian—Wood—Outside

Qualitybilt	11/16
Swedish Venetian Blind Co.	19/36
Wilson, J. G., Corp.	19/40
See also	21/26

Ventilating

See Shades—Window, Skylights, etc.

Blocks

(See also Bricks)

Acoustical

See Acoustical—Materials and Treatments; Tile—Acoustical

Asphalt—Flooring and Paving

Asphalt Block Pavement Co.	15/62
Eightfour	15/62; 15/63
Hastings Pavement Co.	15/63
Specifications	15/63

Cinder Concrete—Aggregates

Nailcrete Corp.	3/61
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Cork and Cement

(See also Insulation)

Corkanstele Co.	5/3
Corkcrete	5/3

Flashing

Asbestile	8/7
Barrett Co.	8/3
Carey, Philip, Co.	8/5
Elastite	8/5
J-M	8/7
Johns-Manville	8/7
Weatherproof Flashing Co.	8/53
Wee-per	8/53
Specifications	8/3; 8/7; 8/53

Furring

See Blocks—Insulating; Tile—Hollow Gypsum; Tile—Hollow Clay or Terra Cotta

Gypsum

See Tile—Hollow—Gypsum

Hollow Glass

See Tile—Hollow—Glass; Brick—Glass

Hollow Tile

See Tile—Hollow—Clay or Terra Cotta; Tile—Hollow—Gypsum; Tile—Hollow or Solid—Cinder Concrete

Insulating

See Insulation—Moulded or Segmental—Brick, Block, etc.—Pressed or Corrugated

Insulating—Setting Cements for

See Cement—Insulating; Cement—Setting—Corkboard and Block Insulation

Lightweight Concrete

Aerocrete Corp. of America	3/58
Porete Mfg. Co.	3/62

Lightweight Concrete—Metal or Porcelain Faced

Macotta	7/19
Maul Macotta Corp.	7/19
Specifications	7/19

Nailing Concrete

See Nailing Concrete; Tile—Hollow or Solid—Cinder Concrete

Blocks—Cont.

Paving—Asphalt

See Blocks—Asphalt—Flooring and Paving

Paving—Granite

See 3/7

Roof

See Tile—Roofing

Wood—Flooring and Paving—Built-up

Bloxonend	15/58
Carter Bloxonend Flooring Co.	15/58
Ironbound	15/56
Storm Flooring Co.	15/56
Universal	15/56
Worth Lumber Co.	15/61
Worthwood	15/61
Specifications	15/61

Wood—Flooring and Paving—Creosoted or Treated

Bloxonend	15/58
Carter Bloxonend Flooring Co.	15/58
Creopine	15/60
Evanite	15/55
Everlevel	15/55
Jennison-Wright Co.	15/59
Jet-Brite	15/59
Kreolite	15/59
Laminite	15/55
Lite-Color	15/59
National Wood Products Co.	15/55
Southern Wood Preserving Co.	15/60
Worth Lumber Co.	15/61
Worthwood	15/61
See also	23/39
Specifications	15/59; 15/60; 15/61

Wood—Flooring and Paving—Natural

Bloxonend	15/58
Carter Bloxonend Flooring Co.	15/58
Jennison-Wright Co.	15/59
Kreolite	15/59
Worth Lumber Co.	15/61
Worthwood	15/61
Specifications	15/59; 15/61

Wood—Tongued and Grooved—Parquetry

Bradley Lumber Sales Co.	15/50
Bruce, E. L., Co.	15/51
Color-Blend	15/50
Corner-Lock	15/50
Diamonds	15/52
Evanite	15/55
Harris Mfg. Co.	15/52
Ironbound	15/56
MFMA	15/53
Maple Flooring Mfrs. Assn.	15/53
Nail-Seal	15/50
National Wood Products Co.	15/55
Plywood Tile and Floor Co., Inc.	15/19
Ready-Finished	15/51
Storm Flooring Co.	15/56
Unit-Wood	15/51
Wood-Mosaic Co., Inc.	15/57
Specifications	15/51

X-Ray Protective

See Tile—X-Ray Protective

Blowers

(See also Fans; Ventilators)

Furnace

See Furnaces—Warm Air—Forced Circulation Fans and/or Blowers

Organ

Orgoblo	22/36
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Pressure or Volume

Arex Co.	26/61
Emerson Electric Mfg. Co.	26/63
G-E	27/13
General Electric Co.	27/13
Hold-Heat	26/15
Russell Electric Co.	26/15
Wing, L. J., Mfg. Co.	26/67
See also	26/2

Blowers—Cont.

Turbo

<i>G-E</i>	27/13
General Electric Co.	27/13
Wing, L. J., Mfg. Co.	26/67
See also	22/36

Ventilating or Exhaust

Ilg Electric Ventilating Co.	26/62
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Blue

Lead

See Lead—Blue

Blue Print

Filing Cabinets

See Cabinets—Blue Print and Plan Filing

Bluestone

Natural

American Blue Stone Co.	3/13
<i>Genesee Valley</i>	3/13
<i>North River</i>	3/13
Specifications	3/13

Boards

Asbestos

See Wall—Board—Asbestos

Black

See Blackboards

Bulletin

Austral Sales Corp.	18/32
Beckley-Cardy Co.	21/19
<i>Duplex</i>	21/19
<i>Jointite</i>	13/44; 21/18
<i>Kencor</i>	15/31
<i>Multi-Use</i>	18/32
Mundet Cork Corp.	13/44; 21/18
New York Silicate Book Slate Co.	21/22
<i>Perma Korkboard</i>	21/23
Rowles, E. W. A., Co.	21/23
<i>Seloc</i>	21/22
<i>Simplex</i>	21/19
Tablet & Ticket Co.	23/55
United Cork Cos.	13/45
<i>W.C.</i>	21/24
<i>Webco</i>	21/24
Weber Costello Co.	21/24
See also	7/20; 23/54
Specifications	18/32; 21/19; 21/23

Bulletin—Changeable Letter or Strip

Tablet & Ticket Co.	23/55
Specifications	23/55

Directory

See Directories—Building

Diving

See Diving—Boards

Fiber

See Wall—Board—Fiber

Phenolic Fiber

See Panels—Phenolic Fiber

Plaster

See Plaster—Board

Plywood

See Plywood

Tack

See Boards—Bulletin

Tool

See 21/4

Wall

See Wall—Board

Wall—Tiled

See Wall—Board—Tiled

Boiler

Breechings

See Steel—Plate Construction

Feeders

See Regulators—Feed Water

Front

See 26/35

Insulation

See Specific Kind of Insulation

Low Water Protector

McDonnell & Miller	26/88
Mercoird Corp.	26/80
Minneapolis-Honeywell Regulator Co.	26/81
<i>Modutrol</i>	26/81
Webster, Warren, & Co.	26/84

Plate Work

See Steel—Plate Construction

Return Traps

See Traps—Return Steam

Settings—Brick

Custodis, Alphons, Chimney Construction Co.	26/99
See also	26/98

Tube Cleaners

See Soot—Blowers and Cleaners

Tubes

See Tubes and Boilers

Water Treatments

See Filters; Softeners—Water, etc.

Boilers

Galvanized—Hot Water Storage

Case, W. A., & Son Mfg. Co.	25/8
<i>Eastern</i>	25/8

Heating—Coal or Coke Fired—Steam, Vapor or Hot Water

Crane Co.	26/26
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Heating—Fire Tube or Water Tube

Brownell Co.	26/23
Burnham Boiler Corp.	26/24
<i>Coal-Eighty</i>	26/27
Columbia Radiator Co.	26/25
Fitzgibbons Boiler Co., Inc.	26/27
<i>500 Series</i>	26/27
<i>Heggie-Simplex</i>	26/30
Kewanee Boiler Corp.	26/29
Lookout Boiler & Mfg. Co.	26/30
<i>Oil-Eighty</i>	26/27
<i>R-Z-U Junior</i>	26/27
<i>700 Series</i>	26/27
Smith, H. B., Co.	26/33
Spencer Heater Co.	26/34
<i>Tankheater</i>	26/27
Titusville Iron Works Co., Div. of Struthers-	
Wells-Titusville Corp.	26/35
<i>Z-U</i>	26/27

Heating—Gas Fired—Combination Heat and Hot Water

(See also Heater—Water—Gas Fired—Combination Boiler and Burner)

Crane Co.	26/26
<i>G-E</i>	26/9
General Electric Co.	26/9

Heating—Gas Fired—Steam, Vapor or Hot Water

(See also Heater—Water—Gas Fired—Combination Boiler and Burner)

Burnham Boiler Corp.	26/24
Crane Co.	26/26
<i>G-E</i>	26/9
<i>Gas-Era</i>	26/14
General Electric Co.	26/9
<i>Heggie-Simplex</i>	26/30
Kewanee Boiler Corp.	26/29
Mueller, L. J., Furnace Co.	26/14
Spencer Heater Co.	26/34

Heating—Locomotive Firebox

Brownell Co.	26/23
Kewanee Boiler Corp.	26/29

Boilers—Cont.

Heating—Magazine or Stoker Feed

Brownell Co.	26/23
Kewanee Boiler Corp.	26/29
Spencer Heater Co.	26/34

Heating—Oil Fired—Combination Heat and Hot Water

(See also Heaters—Water—Gas Fired—Combination Boiler and Burner)

Arco-Petro	26/31
Crane Co.	26/26
Delco Appliance Corp.	26/4
Delco-Heat	26/4
Electrol Incorporated	26/5
Electrol-Kewanee	26/5
G-E	26/9
General Electric Co.	26/9
Gilbarco	26/8
Gilbert & Barker Mfg. Co.	26/8
Hy-Test	26/33
Johnson, S. T., Co.	26/28
Kelvinator Corp.	26/12
Laddi	26/28
May Oil Burner Corp.	26/13
Nu-Way Corp.	26/32
Oil-O-Matic	26/36
Petroleum Heat and Power Co.	26/31
Petro-NoKol	26/31
Quiet May	26/13
Williams Oil-O-Matic Heating Corp.	26/36
Wood, Gar, Industries, Inc.	26/20

Heating—Oil Fired—Steam Vapor or Hot Water
(See also Heaters—Water—Gas Fired—Combination Boiler and Burner)

Arco-Petro	26/31
Burnham Boiler Corp.	26/24
Columbia Radiator Co.	26/25
Crane Co.	26/26
Delco Appliance Corp.	26/4
Delco-Heat	26/4
Electrol-American	26/5
Electrol Incorporated	26/5
Electrol-Kewanee	26/5
G-E	26/9
General Electric Co.	26/9
Gilbarco	26/8
Gilbert & Barker Mfg. Co.	26/8
Heggie-Simplex	26/30
Johnson, S. T., Co.	26/28
Kewanee Boiler Corp.	26/29
Laddi	26/28
May Oil Burner Corp.	26/13
Oil-O-Matic	26/36
Petroleum Heat and Power Co.	26/31
Petro-NoKol	26/31
Quiet May	26/13
Smith, H. B., Co.	26/33
Spencer Heater Co.	26/34
Tempered-Aire	26/20
Williams Oil-O-Matic Heating Corp.	26/36
Wood, Gar, Industries, Inc.	26/20

Heating—Sectional—Coal, Gas, Oil

Arco-Petro	26/31
Burnham Boiler Corp.	26/24
Columbia Radiator Co.	26/25
Crane Co.	26/26
Delco Appliance Co.	26/4
Delco-Heat	26/4
Kelvinator Corp.	26/12
Petro-NoKol	26/31
Petroleum Heat and Power Co.	26/31
Smith, H. B., Co.	26/33
Spencer Heater Co.	26/34

Heating—Smokeless

Brownell Co.	26/23
Burnham Boiler Corp.	26/24
Crane Co.	26/26
800 Series	26/27
Fitzgibbons Boiler Co., Inc.	26/27
Heggie-Simplex	26/30
Kewanee Boiler Corp.	26/29
Lookout Boiler & Mfg. Co.	26/30
600 Series	26/27
Smith, H. B., Co.	26/33
Standard	26/23

Boilers—Cont.

Hot Water Supply

See Heaters—Water

Power—Fire Tube or Water Tube

Brownell Co.	26/23
F Series	26/27
Fitzgibbons Boiler Co., Inc.	26/27
P Series	26/27
Titusville Iron Works Co., Div. of Struthers-Wells- Titusville Corp.	26/35
See also	26/29

Range—Copper

Aquatherm	24/36
Case, W. A., & Son Mfg. Co.	25/8
Dahlquist Mfg. Co.	24/36
Eastern	25/8
G & C	24/38
Gerstein & Cooper Co.	24/38
Herculoy	24/43
International Nickel Co., Inc.	24/39
Monel Metal	24/39
Revere Copper and Brass Inc.	24/43
Turbo	24/36
Whitehead	24/39

Range—Heater Combination

See Heaters—Water—Gas—Combination Range Boiler and Heater; Heaters—Water—Electric—Combination Range Boiler and Heater

Range—Nickel Copper Alloy

International Nickel Co., Inc.	24/39
Monel Metal	24/39
Whitehead	24/39

Register

See Dampers or Registers

Wash

See Laundry—Equipment and Machinery

Bolts

Casement Window

Casement Hardware Co.	18/33
Getty, H. S., & Co., Inc.	18/35
Hope's Windows, Inc.	11/9
Mesker Bros. Iron Co.	11/11
Truscon Steel Co.	11/12
Win-Dor	18/33
Zimmerman, G. F. S., Co., Inc.	18/37
See also	18/25
Specifications	18/35

Cremone

Getty, H. S., & Co., Inc.	18/35
See also	18/25

Door

Getty, H. S., & Co., Inc.	18/35
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Door—Emergency Exit

See Exit—Devices—Fire or Panic

Expansion

Ackerman-Johnson Co.	18/38
See also	3/51

Lavatory Door

Bommer Spring Hinge Co.	18/26
Chicago Spring Hinge Co.	18/27
Fiat Metal Mfg. Co.	20/15
Flush-Metal Partition Corp.	20/14
Lawson Milwaukee	20/16
Metalunit	20/18
Mills Co.	20/7
Triplex	18/27
Weis, Henry, Mfg. Co., Inc.	20/18
WeiSteel	20/18
Specifications	20/15; 20/18

Bonding

Forms

See Metal Forms

Bonding Compounds

Concrete

Adensite Co., Inc.	4/1
Anti-Hydro Waterproofing Co.	4/2
Aquabar Waterproofing Products, Inc.	4/3

(Continued on Next Page)

Bonding Compounds—Cont.

Concrete—Cont.

(Continued from Previous Page)

Asphalcrete	15/32
Bonding Iron	4/13
Dens-tect	4/23
Ironco	4/3
Master Builders Co.	4/13
Moulding, Thos., Floor Mfg. Co.	15/32
Nevins, Oscar W., Co., Inc.	4/14
Par-Lock Plaster Key.	4/23
Sureseal	4/14
Vortex Mfg. Co.	4/23
Specifications	4/13; 4/23

Plaster

See Plaster—Bond

Book

Cases—Wood

See Cabinet Work; Millwork

Distributor—Library

Snead & Co.	21/5
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Lifts

See Lifts—Book; Dumbwaiters

Stack Accessories

Snead & Co.	21/5
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Stacks—Library

Art Metal Construction Co.	21/2
GF	21/1
General Fireproofing Co.	21/1
Lyon Metal Products, Inc.	21/12
Snead & Co.	21/5
See also	21/4

Stacks—Metal

All-Steel-Equip Co., Inc.	21/7
GF	21/1; 23/17
General Fireproofing Co.	21/1
Lyon Metal Products, Inc.	21/12
Patrician	21/7
Snead & Co.	21/5
See also	21/4

Booths

Coupon

See	21/2
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Boots

Conductor

See Shoes—Leader

Border

Lights

See Stage—Fittings and Lighting

Borings

Test—Foundation

Hunt, Robert W., Co.	1/1
Spencer White & Prentis, Inc.	2/4
See also	2/3

Bottled

Gas

See Gas—Tanked or Bottled

Bowls

Stock Watering—Automatic

See	23/39
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Boxes

Feed

See Barn—Equipment

Fire Alarm

See Fire—Alarm Systems

Flower

Allenstone	8/27
Galloway Terra Cotta Co.	3/18

Gutter

See	6/1
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Boxes—Cont.

Ice

See Refrigerators

Letter or Mail

See Letter or Mail—Boxes

Mail Chute

See Chutes—Mail

Outlet—Electric Clock or Fan Hanger

G-E	27/8
General Electric Co.	27/8
Standard Electric Time Co.	29/9
Specifications	27/8

Outlet—Electric—Floor—Adjustable and Non-adjustable

G-E	27/8
General Electric Co.	27/8
Specifications	27/8

Register

See Dampers or Registers

Safe Deposit

Diebold Safe & Lock Co.	23/6
Mosler Safe Co.	23/9
York Safe and Lock Co.	23/8
See also	23/7

Tool

See	21/4
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Wall—Metal

Duplex Hanger Co.	6/24
Emerson Electric Mfg. Co.	26/63
Ideal Hanger Co.	6/25

X-Ray Film Transfer

See Cabinets—X-Ray Film Transfer

Brackets

Ceramic—Shelf, Towel Bar, etc.

See Tile—Ceramic—Floor and Wall—Glazed, Matt, Vitreous

Column

See Caps and Bases—Column

Lamp

See Standards and Brackets—Lamp; Lighting Fixtures

Lavatory

See Lavatory—Brackets or Chairs

Pipe

See Hangers—Pipe; Rolls—Pipe

Radiator

See Radiator—Hangers

Shelving—Adjustable

See Shelving—Adjustable—Hardware for

Sink

Duriron Co., Inc.	24/14
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Sliding Door

See Hangers—Door—Sliding

Window Ventilator

See Ventilators—Window—Brackets for

Breechings

Smokestack

See Steel—Plate Construction

Brick

Acid Resistant

See Brick—Floor—Packing House, Battery Room, etc.

Asphalt

Asphalt Block Pavement Co.	15/62
Eightfour	15/62; 15/63
Hastings Pavement Co.	15/63
Specifications	15/63

Cleaning Compound

Anti-Hydro Waterproofing Co.	4/2
BriXope	4/6
Building Chemicals Corp.	4/6

Brick—Cont.

Common

Belden Brick Co.	3/20
Colonial	3/25
Hy-tex	3/22
Natco	3/31
National Fireproofing Corp.	3/31
Sayre & Fisher Brick Co.	3/25
Wyandot Clay Products Co.	3/27
See also	8/34

Cork

See Insulation—Moulded or Segmental—Brick, Block, etc.

Cork Composition

United Cork Cos.	13/45
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Enameled

Artile	3/26
Brictile	3/26
Continental Clay Products Co.	3/21
Equitable	3/22
Hanley Co.	3/23
Hydraulic-Press Brick Co.	3/22
Hy-tex	3/22
Kraftile Co.	3/30
Sayre & Fisher Brick Co.	3/25
Stark Brick Co.	3/26
Vitri-cote	3/22
Vitri-glaze	3/22

Face or Front

Artile	3/26
Belden Brick Co.	3/20
Brictile	3/26
Chateaux	3/24
Continental Clay Products Co.	3/21
Hanley Co.	3/23
Harvard	3/26
Hydraulic-Press Brick Co.	3/22
Hy-tex	3/22
Kenmores	3/24
Kil-Kraft	8/32
Locher & Co., Inc.	3/24
McNees-Kittanning	3/21
Natco	3/31
National Fireproofing Corp.	3/31
Old English	3/24
Sayre & Fisher Brick Co.	3/25
Stark Brick Co.	3/26
Tidewater Colonials	3/24
Vitritex	3/20
Wyandot Clay Products Co.	3/27
See also	8/34

Fire

See Refractory

Floor—Packing House, Battery Room, etc.

Belden Brick Co.	3/20
Continental Clay Products Co.	3/21
Hanley Co.	3/23
Stark Brick Co.	3/26

Glass

Corning Glass Works	3/28
Insulux	3/29
Owens-Illinois Glass Co.	3/29
Pyrex	3/28

Glazed

See Brick—Enameled

Hollow

Artile	3/26
Brictile	3/26
Hy-tex	3/22
Sayre & Fisher Brick Co.	3/25
Stark Brick Co.	3/26

Hollow Tile

See Tile—Hollow, Clay or Terra Cotta—Exterior and Load Bearing

Insulation

See Insulation—Moulded or Segmental—Block, Brick, etc.
—Pressed or Corrugated

Paving

Hy-tex	3/22
See also	3/27; 8/34

Brick—Cont.

Porcelain

See Brick—Enameled

Salt Glazed

Brictile	3/26
Hydraulic-Press Brick Co.	3/22
Hy-tex	3/22
Natco	3/31
National Fireproofing Corp.	3/31
Stark Brick Co.	3/26
Vitribrik	3/31

Salt Glazed—Smooth

Hydraulic-Press Brick Co.	3/22
Hy-tex	3/22

Special Shape—Moulded, Arch, etc.

Belden Brick Co.	3/20
Continental Clay Products Co.	3/21
Locher & Co., Inc.	3/24
Sayre & Fisher Brick Co.	3/25
Stark Brick Co.	3/26

Veneer Base

See Metal Lath; Metal Lath and Insulation—Combination

Ventilators

See Ventilators—Wall—Common Brick Size

Brick Size

Ventilators—Wall

See Ventilators—Wall—Common Brick Size

Bricks

Door

See Frames—Door

Bridge

Protection

See Protective Coatings or Compounds; Paint—Acid, Alkali or Oil Resistant; Paint—Metal Protective; Preservatives—Metal

Bridges

Steel

See Structural—Steel Fabricators and Designers

Bridging

Joist

(See also Structural Shapes)

Ceco	3/69
Concrete Engineering Co., Inc.	3/69
Kalman Steel Corp.	5/7
Longspan	5/7
MacMar	5/7
Truscon Steel Co.	11/12

Broilers

Coal, Electric or Gas

Edison General Electric Appliance Co., Inc.	22/20
G-E	22/20
See also	22/21

Bronze

Architectural

See Ornamental—Metal Work

Extruded

See Extruded—Metal Shapes; Shapes—Non-structural

Ornamental

See Ornamental—Metal Work

Tablets

See Tablets

Brownstone

Artificial

See Stucco—Portland Cement—Colored—Premixed

Natural

See Sandstone

Brushes and Mops

See 25/47

Bubbling Cups

Drinking

See Fountains—Drinking

Bucks

Door

See Frames—Door

Buildings

Glass

See Glass—Corrugated Wire; Greenhouses and Conservatories

Semi-fabricated—Steel Frame Insulated

Corkanstele Co. 5/3
Ferrocon Corp. 5/5
Specifications 5/3

Standardized—Steel

J & L. 6/5; 24/9

Bulletin

Board—Display Rack

See Blackboard—Display Racks

Boards

Austral Sales Corp. 18/32
Beckley-Cardy Co. 21/19
Duplex 21/19
Jointite 13/44; 21/18
Kencor 15/31
Multi-Use 18/32
Mundet Cork Corp. 13/44; 21/18
New York Silicate Book Slate Co. 21/22
Perma Korkboard 21/23
Rowles, E. W. A., Co. 21/23
Seloc 21/22
Simplex 21/19
Tablet & Ticket Co. 23/55
United Cork Cos. 13/45
W.C. 21/24
Webco 21/24
Weber Costello Co. 21/24
See also 7/20; 23/54
Specifications 18/32; 21/19; 21/23

Boards—Changeable Letter or Strip

Tablet & Ticket Co. 23/55
Specifications 23/55

Bulletproof

Glass

See Glass—Safety

Bumpers and Stops

Door

Bommer Spring Hinge Co. 18/26
Lawson Milwaukee 20/16
Mills Co. 20/7
Sanymetal Products Co., Inc. 20/17

Bunker

Pans

Maforco 22/23
Market Forge Co. 22/23

Bunks

Jail

(See also Jail—Construction and Equipment)
Roanoke Iron & Bridge Works, Inc. 23/13
See also 23/12; 23/14; 23/15

Burglar Alarms

(See also Signal Systems)

Electric

ADT 29/1
Bankers Electric Protective Assn. 23/10
Gamewell Co. 29/5
Holtzer-Cabot Electric Co. 29/6
See also 29/3

Burners

Coal

See Stokers

Burners—Cont.

Garbage, Rubbish or Waste

Dean 22/46
Donley Brothers Co. 26/104
Duplex Incinerator Div. of the Consolidated Iron-Steel Mfg. Co. 22/38
Equal-Aire Incinerator Div. of Sargent Building Specialties Co. 22/39
K-M 22/40
Kellogg Mann Corp. 22/40
Kerner Incinerator Co. 22/41
Kernerator 22/41
Morse Boulger Destructor Co. 22/42
Mueller, L. J., Furnace Co. 26/14
Pittsburgh Incinerator Co. 22/43
Pyroneel Co., Inc., Div. of J. C. Rochester & Co., Inc. 22/44
Rex Incinerator Co., Inc. 22/45
Rexco 22/45
San-a-tor 22/43
Sargent 22/39
Super-Mann 22/40
Washburn & Granger, Inc. 22/46
See also 6/3; 26/29
Specifications 22/39; 22/40; 22/41; 22/43

Gas

Anthony Company 26/22
Delco Appliance Corp. 26/4
Delco-Heat 26/4
Nebulyte 26/22

Kitchen Range—Oil Fired

Oil-O-Matic 26/36
Williams Oil-O-Matic Heating Corp. 26/36

Oil and Equipment

Anthony Company 26/22
Delco Appliance Corp. 26/4
Delco-Heat 26/4
Electrol American 26/5
Electrol Incorporated 26/5
Electrol-Kewanee 26/5
Genii 26/32
Gerotor 26/13
Gilbarco 26/8
Gilbert & Barker Mfg. Co. 26/8
Johnson, S. T., Co. 26/28
Kelvinator Corp. 26/12
May Oil Burner Corp. 26/13
Nebulyte 26/22
NoKol 26/31
Nu-Way Corp. 26/32
Oil-O-Matic 26/36
Petro 26/31
Petroleum Heat and Power Co. 26/31
Petro-NoKol 26/31
Ther-May-Lator 26/13
Quiet May 26/13
Williams Oil-O-Matic Heating Corp. 26/36
Wood, Gar, Industries, Inc. 26/20

Oil and Gas Combination

Anthony Company 26/22
Nebulyte 26/22

Burning Equipment

Coal

See Stokers

Oil

See Burners—Oil and Equipment

Busbar

Systems

See Conduit—Electrical Busbar Systems

Busts

Metal, Stone, Wood, etc.

See Statuary

Butts

Metal

See Hinges

Buzzers

Electric

See Bells and Buzzers—Electric

C

Cabinet

Sinks

See Sinks—Kitchen Cabinet Combination

Tops

Art Metal Construction Co.	22/3
Coppes Bros. & Zook, Inc.	22/4
Elkay Mfg. Co.	25/13
Formica Insulation Co.	15/15
International Nickel Co., Inc.	22/16; 25/24
Micarta	15/21
Monel Metal	22/16; 25/24
Napanee	22/4
Perma Sheen	22/17
Silvi Sheen	22/17
Straitline	25/24
Sturdibilt	25/13
Tracy Mfg. Co.	22/17
Vitro Sheen	22/17
Westinghouse Electric & Mfg. Co.	15/21
Whitehead	22/16; 25/24

Cabinet Work

Plywood

See Plywood

Wood

Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Curtis Companies Service Bureau	10/30; 22/5
Huttig Mfg. Co.	11/17
Mitchell, Robert, Mfg. Co.	10/34
Pyrono	10/34
Qualitybilt	11/16
See also	10/33; 11/13; 12/19; 21/26

Cabinets

(See also Closets)

Bathroom

Acme Metal Products Corp.	25/29
Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Carey	25/37
Columbia Metal Box Co.	25/30
Corcoran	25/32
DeLuxe	25/29; 25/35
Empire	25/32
Evalast	25/39
Fairfacts Co., Inc.	25/31
Fries & Son Steel Construction and Engineering Co., Inc.	25/32
Hall-Mack	25/33
Hallenscheid & McDonald	25/33
Hess Warming & Ventilating Co.	25/34
Hoegger, Inc.	25/36
Lawco	25/35
Lawson, F. H., Co.	25/35
Manhattan Tyteset	25/36
Miami Cabinet Div., Philip Carey Co.	25/37
Mirror-Lite	25/35
Parker, Charles, Co.	25/39
Perfectlite	25/30
Tube-O-Lite	25/34
United Metal Box Co., Inc.	25/38
White Door Bed Co., Inc.	22/14
See also	11/13; 21/29; 25/15; 26/64
Specifications	22/14

Blue Print and Plan Filing

A-S-E	21/7
All-Steel-Equip Co., Inc.	21/7
Berloy	21/9
See also	21/12

Broom

(See also Closets—Broom)

Acme Metal Products Corp.	22/1
Art Metal Construction Co.	22/3
Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Coppes Bros. & Zook, Inc.	22/4
Curtis Companies Service Bureau	22/5
Kitchen Maid Corp.	22/10
Napanee	22/4
St. Charles Mfg. Co.	22/13
See also	11/13

Cabinets—Cont.

China—Wood or Metal

Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Coppes Bros. & Zook, Inc.	22/4
Curtis Companies Service Bureau	10/30
Kitchen Maid Corp.	22/10
Napanee	22/4
White Door Bed Co., Inc.	22/14
See also	11/13
Specifications	22/14

Dish

(See also Cabinets—Kitchen; Cabinets—China)

Kitchen Maid Corp.	22/10
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Dressing

See Cabinets—Wall—Dressing and Desk

Filing

See Filing Equipment

Fire Extinguisher

Elkhart Brass Mfg. Co.	23/4
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Hose—Fire

Alenco	23/3
Allen, W. D., Mfg. Co.	23/3
Elkhart Brass Mfg. Co.	23/4
Hoosier	23/4
Nella	23/3
See also	10/3; 21/4

Hospital—Instruments, Warming, Bed-pan, etc.

A-S-E	21/7
All-Steel-Equip Co., Inc.	21/7
Art Metal Construction Co.	22/3; 23/16
GF	23/17
General Fireproofing Co.	23/17
Kewaunee Mfg. Co.	21/3
Lyon Metal Products, Inc.	21/12
Par-Brook Mfg. Co.	21/4
See also	26/64

Ice Cream

Frigidaire Division, General Motors Corp.	22/26
G-E	22/27
General Electric Co.	22/27
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Instrument

See Cabinets—Hospital

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Acme Metal Products Corp.	22/1
Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Carey	25/37
Curtis Companies Service Bureau	22/5
Miami Cabinet Div., Philip Carey Co.	25/37
Nu-Style	22/2
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Key

A-S-E	21/7
All-Steel-Equip Co., Inc.	21/7
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Kitchen—Combined with Gas or Electric Range

See Ranges—Gas or Electric Kitchen Cabinet Combination

Kitchen—Combined with Refrigerator

See Refrigerator—Kitchen Cabinet Combination

Kitchen—Metal

Acme Metal Products Corp.	22/1
Art Metal Construction Co.	22/3
Dieterich Steel Cabinet Corp.	22/6
Elgin Stove & Oven Co.	22/7
Excel Metal Cabinet Co., Inc.	22/8
James & Kirtland, Inc.	22/9
Metalcraft	22/8
Murphy Door Bed Co.	22/11
Pureaire	22/11
St. Charles Mfg. Co.	22/13
Servettes	22/11
White Door Bed Co., Inc.	22/14
White House	22/9
Whitehead	25/24
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Specifications	22/8; 22/14

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Cabinets—Cont.

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Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Coppes Bros. & Zook, Inc.	22/4
Curtis Companies Service Bureau	22/5
DeLuxe	11/16; 21/26
Kitchen Maid Corp.	22/10
Murphy Door Bed Co.	22/11
Napanee	22/4
Nu-Style Kitchen Cabinets.	22/2
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A-S-E	21/7
All-Steel-Equip Co., Inc.	21/7
Art Metal Construction Co.	22/3; 23/16
Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Coppes Bros. & Zook, Inc.	22/4
Curtis Companies Service Bureau	22/5
Lyon Metal Products, Inc.	21/12
Napanee	22/4
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Metal

See Cabinets—Metal Storage; Cabinets—Kitchen; Cabinets—Hospital, etc.

Metal—Storage

A-S-E	21/7
All-Steel-Equip Co., Inc.	21/7
Art Metal Construction Co.	23/16
Austral Sales Corp.	18/32
Berger Mfg. Co., Div. of Republic Steel Corp.	21/9
Berloy	21/9
GF	21/1; 23/17; 23/18
General Fireproofing Co.	21/1; 23/18
Herring-Hall-Marvin Safe Co.	23/7
Janes & Kirtland, Inc.	22/9
Lyon Metal Products, Inc.	21/12
Master	21/7
Medart, Fred, Mfg. Co.	21/14
Multi-Use	18/32
Par-Brook Mfg. Co.	21/4
Popular	21/7
St. Charles Mfg. Co.	22/13
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Panelboard—Electric

See Panelboard—Electric—Dead and Live Load

Paper Towel

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See Registers—Heating and Ventilating

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Admiral	25/14
All-Metal	20/7
Ambassador	25/13
Aristocrat	25/13
Bathe-Rite	25/17
Commodore	25/13
Cottager	25/18
De Luxe Chromestile Admiral.	25/14
Elkay Mfg. Co.	25/13
Ensign	25/14
Fiat Metal Mfg. Co.	25/14
Junior	25/13
Marine	25/14
Mills Co.	20/7
Milwaukee Stamping Co.	25/17
Neptune	25/14
Skipper	25/14
Sturdibilt	25/13
Warrant	25/14
Weis, Henry, Mfg. Co., Inc.	25/18
WeiStall	25/18
WeiSway	25/18

Cabinets—Cont.

Sink

See Sinks—Kitchen Cabinet Combination

Storage

See Cabinets—Metal—Storage

Telephone

Acme Metal Products Corp. 22/1

Toilet Paper

See Bathroom Accessories

Towel

(See also Bathroom Accessories)

A. P. W. Paper Co.	25/46
Onliwon	25/46
Pulclean Towel Cabinet Co., Inc.	25/48

Wall—Desk and Dressing Table

Carey	25/37
Coppes Bros. & Zook, Inc.	22/4
Miami Cabinet Div., Philip Carey Co.	25/37
Napanee	22/4
White Door Bed Co.	22/14
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X-Ray Film Safety Storage

A-S-E	21/7
All-Steel-Equip Co., Inc.	21/7
GF	23/17

X-Ray—Viewing

Art Metal Construction Co.	23/16
GF	23/17

Cables

Electric

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Cabs

Elevator

See Cars—Elevator

Caen Stone

Reproduction

See Stone—Artificial; Paint—Texturing; Marble—Artificial; Stucco—Portland Cement—Colored—Premixed; Plaster—Texturing—Colored

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Equipment

See Furniture—Cafeteria and Restaurant

Cages

Bank and Office

Acorn Wire and Iron Works.	6/26
All-Metal Partition Co., Inc.	20/11a
Art Metal Construction Co.	21/2
Hauserman, E. F., Co.	20/4
Kentucky Metal Products Co., Inc.	6/29
Kmpc	6/29
Logan Co.	7/18
Sanymetal Products Co., Inc.	20/9
Sloane, W. & J.	20/10
Snead & Co.	20/8
Watson Mfg. Co., Inc.	19/12
See also	7/14; 7/20; 7/22
Specifications	6/26; 20/10

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Acorn Wire and Iron Works.	6/26
Consolidated Expanded Metal Cos.	6/27
Cyclone Fence Co.	23/48
Kentucky Metal Products Co., Inc.	6/29
Kmpc	6/29
Logan Co.	7/18
Safe-T-Mesh	6/27
Steelcrete	6/27
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Wire—Beam and Girder

Ceco	3/69
Concrete Steel Co.	3/47

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Wire—Beam and Girder—Cont.

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J-M.	3/49
Johns-Manville	3/49
Ryerson, Joseph T., & Son, Inc.	3/51
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Truscon Steel Co.	11/12

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Rings

Ryerson, Joseph T., & Son, Inc.	3/51
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Contractors or Engineers

See Contractors—Piling; Contractors—Concrete Construction; Engineers—Concrete Construction; Engineers—Foundation

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Paint

See Paint—Water

Calcium

Chloride

Solvay Sales Corp.	4/17
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Calking

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Calling

Systems

See Signal Systems; Telephone—Signal System Combination

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Sound

See Sound Picture Equipment

Candelabras

Electric

See Standards and Brackets—Lamp; Lighting Fixtures

Cane

Metal—Fabric

See Metal Fabric

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Canvas

See Awnings—Canvas, etc.

Marquises

Logan Co.	7/18
Overly Mfg. Co.	10/11
Pennsylvania Wire Glass Co.	9/5
Tyler, W. S., Co.	7/26
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NYACO	19/44
New York Awning Co., Inc.	19/44
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Store Window, etc.

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Dean	22/46
G&G Hoist Corp.	26/112
Potts Ash Hoist Corp.	26/113
Washburn & Granger, Inc.	22/46

Ash—Trucks for

See Trucks—Ash Can

Canvas

Cement

Barnett Canvas Goods & Bag Co., Inc.	8/21
Bartex	8/21

Flashing

See Flashings—Fabric, Asbestos, etc.

Roofing and Deck

Barco-Dex	8/21
Barnett Canvas Goods & Bag Co., Inc.	8/21
Barrell, William L., Co., Inc.	8/20
Con-Ser-Tex	8/20

Wall Coverings

Columbus Coated Fabrics Corp.	15/48
Fab-Rik-O-Na	15/49
Wall-Tex	15/48
Wiggin's, H. B., Sons Co.	15/49
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Capacitors

G-E.	27/13
General Electric Co.	27/13
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Capitals

Composition

Hartmann-Sanders Co.	12/20
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Caps

Wainscot—Tile

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Caps and Bases

Column

Hartmann-Sanders Co.	12/20
Schwerd, A. F., Mfg. Co.	12/21

Post

Duplex Hanger Co.	6/24
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Ideal Hanger Co.	6/25

Caps and Pots, Chimney

Clay or Terra Cotta

Atlantic Terra Cotta Co.	3/15
Galloway Terra Cotta Co.	3/18
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Chimney

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Carpet

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Carrel

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Carriage Calling Systems

See Signal Systems—Carriage Calling

Carriers

Feed, Litter, Milk Can, etc.

Louden Machinery Co.	23/39
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Garment

See Garment—Carrier Equipment

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Louden Machinery Co.	23/39
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Carriers or Supports

Lavatory or Urinal

Zurn, J. A., Mfg. Co.	24/29
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Elevator

Otis Elevator Co. 30/8
Tyler, W. S., Co. 7/26
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Movable Stage Band

Clark, Peter, Inc. 23/19

Casement

Adjusters

See Hardware—Casement Window—Adjusters

Fasteners

See Hardware—Casement Window—Fasteners

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Hardware

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Garcy 7/15
Garden City Plating & Mfg. Co. 7/15
Herring-Hall-Marvin Safe Co. 23/7
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Laboratory—Metal

See Cabinets—Metal—Storage

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Casings

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Knapp Bros. Mfg. Co. 14/6
Milcor Steel Co. 14/7
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Underground Pipe

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Window—Combined with Radiator Recess

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Window—Metal

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Milcor Steel Co. 14/7
Richsto Metal Trim Co., Div. of Milcor Steel Co. 14/7
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Window—Phenolic Fiber

Formica Insulation Co. 15/15

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No-Mar 21/30

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Aluminum Co. of America 7/2
Bohn Aluminum & Brass Corp. 7/6
Bohnalite 7/6
Bohnolloy 7/6
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Castings—Cont.

Brass or Bronze

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Kawneer Co. 11/10
Metalcrafts 7/21
Penn Brass & Bronze Works. 7/22
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Chrome Nickel Iron Alloy

Enduro 7/10
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Iron

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Iron—Architectural

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Iron—Special

Canton Foundry & Machine Co. 6/1
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Municipal

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Nickel

International Nickel Co., Inc. 7/7
Metalcrafts 7/21

Nickel Copper Alloy

Inco 7/7
International Nickel Co., Inc. 7/7
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Steel and Steel Alloy

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Covers and Gratings for

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Boosey, Norman, Mfg. Co. 24/21
Compound Injector & Specialty Co. 24/23
Dehn's 24/23
GeM 24/23
Gordon 24/28
Greaseptor 24/29
Josam Mfg. Co. 24/27
Josam-Marsh 24/27
Re-Tar-Do 24/23
Wade Mfg. Co. 24/28
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Caulking and Glazing

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Accurate Metal Weather Strip Co. 19/13
Allied Pneumatic Services, Inc. 1/2
Anti-Hydro Waterproofing Co. 4/2
Aquabar Waterproofing Products, Inc. 4/3
Aquaseal 16/21
Aquatex 4/3
Calbar Paint & Varnish Co. 4/8
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Kuhls, H. B. Fred.	17/12
Master Builders Co.	4/13
Merco	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Minwax Co., Inc.	4/12
Nevins, Oscar W., Co., Inc.	4/14
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Plastic Products Co.	17/13
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Acoustical

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Milcor Steel Co.	14/14
Newport Rolling Mill Co., Inc.	8/47
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Thermax Div., Northwest Magnesite Co.	13/24
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See Caulking and Glazing—Compounds

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Colorundum	4/9
Dycrome	4/13
Horn, A. C., Co.	4/9
Master Builders Co.	4/13
Master Mix	4/13
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Pecora Paint Co., Inc.	3/42
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Floor Curing and Protection

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AcouSTICK	13/15
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Atlas Supply Co.	13/15
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See Hardeners and Densifiers—Cement and Concrete

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<i>Brixment</i>	3/37
<i>Carney Cement Co.</i>	3/34
<i>Flamingo</i>	3/40
<i>Hy-Test Cement Co.</i>	3/35
<i>Kosmortar</i>	3/36
<i>Kosmos Portland Cement Co., Inc.</i>	3/36
<i>Louisville Cement Co., Inc.</i>	3/37
<i>Medusa-Mix</i>	3/38
<i>Medusa Portland Cement Co.</i>	3/38
<i>Riverton Lime & Stone Co., Inc.</i>	3/40
<i>Stoneset</i>	3/38
<i>Superior Cement Corp.</i>	3/41
<i>Wifco</i>	3/41
<i>Woodville Lime Products Co.</i>	14/25
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Mastic—for Applying or Laying Wood Fiber, Tile and Plank Flooring or Units

<i>Adhestik</i>	13/26
<i>Tile-Tex Co.</i>	15/35
<i>Wood Conversion Co.</i>	13/26
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Non-staining

<i>Atlas</i>	15/12
<i>Atlas Waterproofed White</i>	15/12
<i>Atlas White</i>	15/12
<i>Medusa Portland Cement Co.</i>	3/38
<i>Stoneset</i>	3/38
<i>Superior Cement Corp.</i>	3/41
<i>Universal</i>	15/12
<i>Universal Atlas Cement Co.</i>	15/12
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Plaster

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<i>Calbar Paint & Varnish Co.</i>	4/8
<i>Caulk-O-Seal</i>	4/8
<i>Elastic</i>	4/10
<i>Hetzel Roofing Products Co.</i>	8/54
<i>Horn, A. C., Co.</i>	4/9
<i>Kuhls, H. B. Fred.</i>	4/10
<i>Master Builders Co.</i>	4/13
<i>Merco</i>	16/21
<i>Merkin, M. J., Paint Co., Inc.</i>	16/21
<i>Tremco Mfg. Co.</i>	4/22
<i>Vulcatex</i>	4/9
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<i>Atlas</i>	15/12
<i>Atlas Waterproofed White</i>	15/12
<i>Atlas White</i>	15/12
<i>Kosmos-H.E.S.</i>	3/36
<i>Medusa-Mix</i>	3/38
<i>Medusa Portland Cement Co.</i>	3/38
<i>Plastic Marble</i>	14/20
<i>Roman</i>	14/20
<i>Stoneset</i>	3/38
<i>Superior Cement Corp.</i>	3/41
<i>Tri-Cal</i>	3/41
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<i>Maximent Co.</i>	15/9
<i>Plastic Marble</i>	14/20
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Portland—Liquid

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Portland—Waterproofed

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<i>Atlas Waterproofed White</i>	15/12
<i>Kosmos</i>	3/36
<i>Medusa Portland Cement Co.</i>	3/38
<i>Stoneset</i>	3/38
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Portland—White

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<i>Atlas White</i>	15/12
<i>Medusa Portland Cement Co.</i>	3/38
<i>Universal Atlas Cement Co.</i>	15/12

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<i>Bird & Son, inc.</i>	8/4
<i>Carey, Philip, Co.</i>	8/11
<i>Certain-teed Products Corp.</i>	8/16
<i>Genasco</i>	8/2
<i>Hetzel Roofing Products Co.</i>	8/54
<i>Neponset</i>	8/4
<i>Olo</i>	16/28
<i>Ruberoid Co.</i>	8/18
<i>Truscon Laboratories</i>	4/21
<i>USG</i>	8/19
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Setting—Boiler

<i>Genasco</i>	8/2
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Setting—Corkboard and Block Insulation

<i>Atlas Supply Co.</i>	13/15
<i>Hetzel Roofing Products Co.</i>	8/54

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Cesspools

Bell Trap

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With Seepage Pan

See Drains—Floors, Yard, etc.

Chain

Cable

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Flat Steel

Smith & Egge Div., Turner & Seymour Mfg. Co. 18/10

Flat Steel and Steel Wire

American Chain Co., Inc. 18/7
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Hooks, Fasteners, etc.

American Chain Co., Inc. 18/7
Smith & Egge Div., Turner & Seymour Mfg. Co. 18/10

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Acco

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Giant Metal

18/10
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18/10
S&E

18/10
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General Fireproofing Co. 21/1
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Clark, Peter, Inc. 23/19

Theater, Assembly Hall, etc.

Clark, Peter, Inc. 23/19

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Troughs or Rails

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Furring, Studding, etc.

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Concrete Engineering Co., Inc. 3/69
Concrete Steel Co. 3/47
Gold Bond 14/8
Goldsmith Metal Lath Co. 14/3
J & L 5/6
Jones & Laughlin Steel Corp. 5/6
Kalman Steel Corp. 5/7
Longspan 5/7
MacMar 5/7
Milcor Steel Co. 14/7
National Gypsum Co. 14/8
Penco 14/11
Penmetal 14/11
Penn Metal Co. 14/11
Red Top 14/9
Shurebond 14/3
Simp-L-On 14/12
Simplon Products Corp. 14/12
Steel-H-Studs 14/9
Stran-Steel Corp. 5/8
Truscon Steel Co. 11/12
USG 14/9
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Structural

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American Automatic Electric Sales Co. 29/12
Autelco 29/12
North Electric Mfg. Co. 29/16

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Hotel, Club, etc.

Peterson 23/53
Vogel Peterson Co., Inc. 23/53

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Richards-Wilcox Mfg. Co., Inc. 30/15
Rich-Wil 30/15
Rixson, Oscar C., Co. 18/29
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Rixson, Oscar C., Co. 18/29
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Knight Maurice A. 24/16
Knight-Ware 24/16
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Burglar-proof

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Edwards and Co., Inc. 29/3
Pryanco 26/64
Pryne & Co., Inc. 26/64
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Deagan, J. C., Inc. 23/20
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Atlantic Terra Cotta Co. 3/15
Galloway Terra Cotta Co. 3/18
Ludowici-Celadon Co. 8/33
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Æolus Dickinson Industrial Div. Paul Dickinson, Inc. 9/9
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Common Brick

American Chimney Corp. 26/98
Kellogg, M. W., Co. 26/100

Radial Brick

American Chimney Corp. 26/98
Custodis, Alphons, Chimney Construction Co. 26/99
Kellogg, M. W., Co. 26/100

Reinforced Concrete

Custodis, Alphons, Chimney Construction Co. 26/99
Kellogg, M. W., Co. 26/100

Repairing and Remodeling

American Chimney Corp. 26/98
Custodis, Alphons, Chimney Construction Co. 26/99
Kellogg, M. W., Co. 26/100

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Control Apparatus

(Water, Sewage and Swimming Pool Purification, Anti-septics, Disinfectants, Bleachers, Deodorizers, etc.)

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Everson Filter Co. 23/30
Marsh Electro Chlorination Co., Inc. 23/31
W & T 23/33
Wallace & Tiernan Co., Inc. 23/33
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Nickel Iron Alloys

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Dean	22/46
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Lockseam	22/35
Porcelain Products Co.	22/35
Washburn & Granger, Inc.	22/46
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Haslett Chute and Conveyor Co.	22/34
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Ice Recording

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Haslett Chute and Conveyor Co.	22/34
Lockseam	22/35
Porcelain Products Co.	22/35
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Carey	25/37
Miami Cabinet Div., Philip Carey Co.	25/37

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Cutler Mail Chute Co.	23/52
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I-Beam—Pipe Hanger

Grinnell Co., Inc.	26/93
U.F.S.	26/93

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Grinnell Co., Inc.	26/93
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Cleaners, Polishers and Preservatives

Tile, Marble, Linoleum, Brick, Wood, etc.

Bruce, E. L., Co.	15/51
Hil-Brite	16/2
Hillyard Chemical Co.	16/2
Onex-Seal	16/2
Terrazine-Process	16/2
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Donley Brothers Co.	26/104
Hy-Chairs	3/47
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Ty-Chairs	3/47

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Ceco	3/69
Concrete Steel Co.	3/47
Consolidated Expanded Metal Cos.	3/48
J-M	3/49
Johns-Manville	3/49
Ryerson Joseph T., & Son, Inc.	3/51
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J & L	5/6
Jones & Laughlin Steel Corp.	5/6
Kalman Steel Corp.	3/50
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Concrete Steel Co.	3/47
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Goldsmith Metal Lath Co.	14/3
J & L	5/6
Jones & Laughlin Steel Corp.	5/6
Milcor Steel Co.	14/7
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Faraday	29/8
Holtzer-Cabot Electric Co.	29/6
Standard Electric Time Co.	29/9
Telechron	29/11
Warren Telechron Co.	29/11

Watchman's

ADT	29/1
American Automatic Electric Sales Co.	29/12
American District Telegraph Co.	29/1
Autelco	29/12
Holtzer-Cabot Electric Co.	29/6
P-A-X	29/12
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Clocks

Bank—Pedestal, Bracket, etc.

Standard Electric Time Co.	29/9
Telechron	29/11
Thomas, Seth, Clock Co.	29/10
Warren Telechron Co.	29/11

Electric

Holtzer-Cabot Electric Co.	29/6
Standard Electric Time Co.	29/9
Telechron	29/11
Thomas, Seth, Clock Co.	29/10
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Minneapolis-Honeywell Regulator Co.	26/81

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Regulator or Master

<i>Faraday</i>	29/8
<i>Johnson Service Co.</i>	26/79
<i>Standard Electric Time Co.</i>	29/9
<i>Stanley & Patterson, Inc.</i>	29/8
<i>Telechron</i>	29/11
<i>Warren Telechron Co.</i>	29/11

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Time

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<i>Telechron</i>	29/11
<i>Thomas, Seth, Clock Co.</i>	29/10
<i>Warren Telechron Co.</i>	29/11

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Door—Elevator

(Including Manual, Electric or Pneumatic)

<i>Cornell Iron Works</i>	10/20
<i>ES</i>	30/13
<i>Elevator Supplies Co., Inc.</i>	30/13
<i>Grant Elevator Equipment Corp.</i>	30/14
<i>Otis Elevator Co.</i>	30/8
<i>PowR-Way</i>	30/15
<i>Richards-Wilcox Mfg. Co., Inc.</i>	30/15
<i>Richmond Fireproof Door Co.</i>	10/16
<i>Rich-Wil</i>	30/15
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<i>Ceda'line</i>	15/51

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<i>Cedex Co.</i>	16/12
<i>Lavendex</i>	16/12

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<i>Cedex Co.</i>	16/12
<i>Lavendex</i>	16/12
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<i>K-Veniences</i>	18/41

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Seats

<i>Church, C. F., Mfg. Co., Div. of American Radiator & Standard Sanitary Corp.</i>	25/11
<i>Evernu</i>	25/12
<i>Never-Split</i>	25/12
<i>Never Split Seat Co.</i>	25/12
<i>Sani-Black</i>	25/11
<i>Sani-Colored</i>	25/11
<i>Sani-White</i>	25/11

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<i>Curtin, A. F., Valve Co.</i>	25/9
<i>Curtin-Lever</i>	25/9
<i>Curtin-Rotary</i>	25/9
<i>Curtin-Victory</i>	25/9

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<i>Janes & Kirtland, Inc.</i>	22/9
<i>Kitchen Maid Corp.</i>	22/10
<i>Napanee</i>	22/4
<i>White House</i>	22/9

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<i>Kaustine Co., Inc.</i>	24/19
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Onepiece

<i>Case, W. A., & Son Mfg. Co.</i>	25/8
<i>T/N</i>	25/8

Tank

<i>Crane Co.</i>	25/1
<i>General Ceramics Co.</i>	25/10
<i>Ipswich</i>	25/1
<i>Monada</i>	25/1
<i>Spaulding</i>	25/10

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<i>Kitchen Maid Corp.</i>	22/10
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Water—Bends and Fittings for

<i>Josam Mfg. Co.</i>	24/27
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<i>Josam Mfg. Co.</i>	24/27
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Water—Flush Tank Combination

<i>Case, W. A., & Son Mfg. Co.</i>	25/8
<i>DeLuxe Water Saver</i>	25/8
<i>General Ceramics Co.</i>	25/10
<i>Spaulding</i>	25/10
<i>Trojan</i>	25/8
<i>Watersaver</i>	25/8

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<i>Case, W. A., & Son Mfg. Co.</i>	25/8
<i>Trojan</i>	25/8

Water—Low-down Tank

<i>Case, W. A., & Son Mfg. Co.</i>	25/8
<i>Crane Co.</i>	25/1
<i>DeLuxe Water Saver</i>	25/8
<i>Monada</i>	25/1
<i>Neuton</i>	25/1
<i>T/N</i>	25/8
<i>Trojan</i>	25/8
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 Chamberlin Metal Weatherstrip Co., Inc.....19/47
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 Columbia Mills Inc.....19/30
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- American Steel Furniture Co.....20/12
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- Clark, Peter, Inc.....23/19

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- Clark, Peter, Inc.....23/19
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Theater Stage—Hangers and Track for

- Clark, Peter, Inc.....23/19

Theater Stage—Operators for

- Clark, Peter, Inc.....23/19

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- Clark, Peter, Inc.....23/19

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- Kamrass, H., & Son, Inc.....21/27

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- See Dampers and Registers

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- American Foundry & Furnace Co.....26/45
 American Warming & Ventilating Co.....26/46
 Arex Co.26/61
 Auer Register Co.....26/47
 Barber-Colman Co.26/48
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 Burt Mfg. Co.....9/12
 Carrier Engineering Corp.....26/3
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 Emerson Electric Mfg. Co.....26/63
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 Independent Register & Mfg. Co.....26/54
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- See Waterproofing

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- See Roof Construction

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United States Bronze Sign Co., Inc.....	7/27
Tablet & Ticket Co.....	23/55
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Faraday	29/8
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Colgate-Palmolive-Peet Co.	25/40
Imperial Brass Mfg. Co.....	25/41
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Palmer Products, Inc.....	25/42
Palmolive	25/40
Parker, Charles, Co.....	25/39
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Procter & Gamble Co.....	25/43
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Van Arsdale-Harris Lumber Co., Inc.....	23/29

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Guastavino, R., Co.....	13/30
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In-Dor-Seals	19/16
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See Operators—Door

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Donley Brothers Co.....	26/104
Higgin Mfg. Co.....	25/26
Knapp Bros. Mfg. Co.....	14/6
Lawco	25/35
Lawson, F. H., Co.....	25/35
Loctor	25/28
Miami Cabinet Div., Philip Carey Co.....	25/37
Milcor Steel Co.....	25/27
Tuttle & Bailey, Inc.....	26/55
Walsh-Spencer Co., Inc.....	25/28
Watson Mfg. Co., Inc.....	19/12
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Bayley, William, Co.....	11/2
Cornell Iron Works, Inc.....	10/20
Detroit Steel Products Co.....	11/5
Federal Steel Sash Co., Inc.....	11/6
Fenestra-Byrne	11/5
Morgan	11/12
Overhead Door Corp.....	18/20
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.....	18/22
Super-Way	18/22
Truscon Steel Co.....	11/12
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Covert, H. W., Co.....	26/102
Donley Brothers Co.....	26/104
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Milcor Steel Co.....	25/27
Peerless Mfg. Corp., Inc.....	26/106
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Automatic Operators

See Operators—Door

Balanced

Ellison Bronze Co., Inc.....	10/4
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Bifolding and Canopy

See Doors—Folding—Horizontal

Canopy

See Doors—Airplane Hangar

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(See also Windows—Casement)

Cotswold	11/9
Crittall Manufacturing Co., Inc.....	11/4
Detroit Steel Products Co.....	11/5
Fenestra	11/5
Hope's Windows Inc.....	11/9
Roddie Lumber and Veneer Co.....	10/35
Truscon Steel Co.....	11/12
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Jamison Cold Storage Door Co.....	22/24
Stevenson	22/24
Stevenson Super-Freezer.....	22/24
Victor	22/24
Yorkco	22/32

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Von Duprin	18/42
Vonnegut Hardware Co.....	18/42

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Dumbwaiter

See Dumbwaiter—Doors

Electrically Operated

See Doors—Mechanically or Motor Operated

Elevator — Counterbalanced — Corrugated, Tin Clad, Metal Covered, etc.

Durabilt Steel Locker Co.....	18/18
Fyrgard	10/16
Peelle Co.	10/15
Richmond Fireproof Door Co.....	10/16
St. Louis Fire Door Co.....	10/18
Seco	10/17
Security Fire Door Co.....	10/17
Simplex Door Co.....	10/19
Ti-Co-Dors	10/18
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Specifications	10/15; 10/16; 10/17

Elevator—Passenger

See Enclosures—Elevator; Doors—Hollow Metal; Doors—Metal Covered; Doors—Veneered—Fireproof (Asbestos and Wood Combination)

Elevator—Telescoping—Vertical Sliding

Duragard	10/16
Fyrgard	10/16
Richmond Fireproof Door Co.....	10/16
Sec-Tel	10/17
Security Fire Door Co.....	10/17
Specifications	10/16

Doors—Cont.

Entrance—Bronze, Brass, Iron, Aluminum, Chrome and Nickel Alloys, etc.

Art Metal Construction Co.....	10/2
Atchison Revolving Door Co.....	10/26
Crittall Manufacturing Co., Inc.....	11/4
Ellison Bronze Co., Inc.....	7/13; 10/4
G.B.C.	10/27
General Bronze Corp.....	7/16; 10/27
Gorham Co.	7/17
International Revolving Door Co.....	10/28
Kawneer Co.	11/10
Logan Co.	7/18
McGann, T. F., & Sons Co.....	7/20
Metalcrafts	7/21
Roanoke Iron & Bridge Works, Inc.....	23/13
Van Kannel Revolving Door Co.....	10/29
See also.....	7/14; 7/16; 7/22; 7/26; 10/6; 21/2; 23/12
Specifications	10/27; 11/4

Entrance—Motor Operated

See Doors—Entrance; Doors—Mechanically or Motor Operated

Extruded Metal

See Doors—Hollow Metal

Fire

See Specific Type of Door, as: Hollow Metal; Metal Covered; Rolling Steel; Tin Clad; Corrugated Steel; Veneered—Fireproof (Asbestos and Wood Combination); etc.

Fire Resisting Wood

See Doors—Veneered—Flush and Paneled—of Fire Resisting Wood

Flush

See Doors—Hollow Metal; Doors—Metal Covered; Doors—Veneered; Doors—Wood

Folding—Fabric Covered

Automaticfold	20/22
Circle A	20/22
DeLuxe	20/21
FoldeR-Way	20/24
Horn Folding Partition Co.....	20/21
Multifold	20/25
Newcastle Products, Inc.	20/22
Richards-Wilcox Mfg. Co., Inc.....	20/24
Selfold	20/21
Standardfold	20/22
Wilson, J. G., Corp.....	20/25
Specifications	20/21

Folding—Horizontal

(See also Hangers—Door—Sliding Folding Partition; Partitions—Folding; Doors—Overhead Type)

Barber-Colman Co.	18/15
Barcol OVERdoor	18/15
Bayley, William, Co.....	11/2
Better Bilt Door Div. of Frederick Kaiser Products, Inc.	18/16
Bi-Fold	10/15; 10/20
Cornell Iron Works, Inc.....	10/20
Detroit Steel Products Co.....	11/5
Fenestra	11/5
Fold-Up-Dors	10/18
Kinnear Mfg. Co.....	10/22
McKee Door Co.....	18/21
Morgan	11/12
Overhead Door Corp.....	18/20
Peelle Co.	10/15
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.....	18/22
Richmond Fireproof Door Co.....	10/16
St. Louis Fire Door Co.....	10/18
Steeldor	18/21
Truscon Steel Co.....	11/12
Specifications	10/15; 11/12; 18/20; 18/21

Folding—Sound Retarding

See Doors—Sound Retarding

Freezer

See Doors—Cold Storage or Refrigerator

French

See Doors—Casement

Doors—Cont.

Garage

Barber-Colman Co.	18/15
Barcol OVERdoor.....	18/15
Better Bilt Door Div. of Frederick Kaiser Products, Inc.	18/16
Cornell Iron Works, Inc.....	10/20; 18/17
Detroit Steel Products Co.....	11/5
Durabilt Steel Locker Co.....	18/18
Easy Lift.....	18/14
Fenestra	11/5
Float-Over	10/20; 18/17
Fold-Up-Dors	10/18
Horifold	10/17
Kinnear Mfg. Co.....	10/22
McKee Door Co.....	18/21
Mesker Bros. Iron Co.....	11/11
Overdoors	11/12
Overhead Door Corp.....	18/20
Peelle Co.	10/15
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.....	18/22
Roll-up	18/24
Rol-N-Fold	6/3
Rol-Top	10/22
Ro-Way	18/23
Rowe Mfg. Co.....	18/23
St. Louis Fire Door Co.....	10/18
Sectionfold	10/23
Security Fire Door Co.....	10/17
Stanley Works	18/24
Steeldor	18/21
Truscon Steel Co.....	11/12
Wheeler Osgood Sales Corp.....	10/36
Wilson, J. G., Corp.....	10/23
WOCO	10/36
See also	11/13; 21/26; 22/2
Specifications.....	10/22; 10/36; 11/11; 18/20; 18/21

Glass—Shower Stall

See Doors—Shower Stall—Glass

Hangar—Airplane

See Doors—Airplane Hangar

Hollow Metal

Aetna Steel Products Corp.....	10/1
Art Metal Construction Co.....	10/2
Dahlstrom Metallic Door Co.....	10/3
Detroit Steel Products Co.....	11/5
Durabilt Steel Locker Co.....	18/18
Ellison Bronze Co., Inc.....	10/4
Fenestra Fireshield	11/5
Firecraft Door Co.....	10/5
Hauserman, E. F., Co.....	20/4
Jamestown Metal Corp.....	10/7
Kawneer Co.	11/10
Overhead Door Corp.....	18/20
Par-Brook Mfg. Co.....	21/4
Truscon Steel Co.....	11/12
Trussbilt, Inc.	10/12
See also.....	7/13; 11/3; 20/3; 27/1
Specifications	11/12

Horizontal Folding

See Doors—Folding—Horizontal

Horizontal Sliding or Trolley

See Doors—Sliding, Folding, etc.; Doors—Folding—Horizontal

Horizontal Trolley

Ro-Way	18/23
Rowe Mfg. Co.....	18/23

Industrial

See Specific Kind of Door

Industrial Oven

Kinnear Mfg. Co.....	10/22
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Jail

See Jail—Construction and Equipment

Kalamein

See Doors—Metal Covered

Kitchenette

See Doors—Rolling—Steel

Marine

See Specific Type of Door

PRODUCTS

Doors—Cont.

Mausoleum

See7/13; 7/16; 7/22

Mechanically or Motor Operated

(Including: Horizontal and Vertical Sliding; Horizontal Folding and Trolley; Counter-balanced and Telescoping; Rolling Steel; etc.)

Akbar	10/22
Babcock-Davis Corp.	10/13
Barber-Colman Co.	18/15
Better Bilt Door Div. of Frederick Kaiser Products, Inc.	18/16
Circle A	20/22
Cornell Iron Works, Inc.	10/20
DeLuxe	20/21
Detroit Steel Products Co.	11/5
Durabilt Steel Locker Co.	18/18
Fenestra-Byrne	11/5
Fyrgard	10/16
Horn Folding Partition Co.	20/21
Johnson, Geo. W., Mfg. Co.	10/21
Kinnear Mfg. Co.	10/22
Llenroc	10/20
Mahon, R. C., Co.	10/24
McKee Door Co.	18/21
Newcastle Products, Inc.	20/22
Overhead Door Corp.	18/20
Peelle Co.	10/15
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Richmond Fireproof Door Co.	10/16
Rol-Top	10/22
St. Louis Fire Door Co.	10/18
Security Fire Door Co.	10/17
Selfold	20/21
Superior	10/22
Telco	10/15
Ti-Co-Dors	10/18
Truscon Steel Co.	11/12
Uni-Motor	10/17
Wal-El-Dors	10/18
Wilson, J. G., Corp.	10/23
Specifications	10/15; 10/16; 10/17; 10/22; 18/20; 20/21

Metal Covered

Aetna Steel Products Corp.	10/1
Air-Kore	10/23
Alsteel-Dors	10/18
Barber-Colman Co.	18/15
Barcol OVERdoor	18/15
Better Bilt Door Div. of Frederick Kaiser Products, Inc.	18/16
Co-Bal-Dors	10/18
Coburn Trolley Track Co.	18/14
Duragard	10/16
Fold-Up-Dors	10/18
Friedrich, E. H., Co.	10/6
Fyrgard	10/16
Hamlin, Irving	13/34
Mahon, R. C., Co.	10/9
Mecco	10/10
Moeschl-Edwards Corrugating Co., Inc.	10/10
Overhead Door Corp.	18/20
Overly Mfg. Co.	10/11
Peelle Co.	10/15
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Richmond Fireproof Door Co.	10/16
St. Louis Fire Door Co.	10/18
Seco	10/17
Sec-Tel	10/17
Security Fire Door Co.	10/17
Ti-Co-Dors	10/18
Wal-El-Dors	10/18
Wilson, J. G., Corp.	10/23
See also	9/7; 10/35
Specifications	10/10; 10/16; 10/17

Overhead—Hardware for

See Hardware—Garage Door

Overhead Type

Barber-Colman Co.	18/15
Barcol OVERdoor	18/15
Bayley, William, Co.	11/2
Better Bilt Door Div. of Frederick Kaiser Products, Inc.	18/16

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Doors—Cont.

Overhead Type—Cont.

(Continued from Previous Column)

Cornell Iron Works, Inc.	10/20; 18/17
Durabilt Steel Locker Co.	18/18
Easy Lift	18/14
Float-Over	10/20; 18/17
Kinnear Mfg. Co.	10/22
M & M	11/11
McKee Door Co.	18/21
Mesker Bros. Iron Co.	11/11
Overdoors	11/12
Overhead Door Corp.	18/20
OveR-Way	18/22
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Rol-Top	10/22
Roll-up	18/24
Ro-Way	18/23
Rowe Mfg. Co.	18/23
Sectionfold	10/23
Stanley Works	18/24
Steeldor	18/21
Truscon Steel Co.	11/12
Wilson, J. G., Corp.	10/23
See also	21/26
Specifications	10/22; 11/11; 11/12; 18/20; 18/21

Paneled

See Specific Type, as: Doors—Hollow Metal; Doors—Metal Covered; Doors—Veneered; Doors—Wood

Pipe Shaft or Access

See Doors—Access

Plywood Panels for

See Plywood

Power

See Specific Type of Door; Doors—Mechanically or Motor Operated; Operators—Door

Refrigerator

See Doors—Cold Storage or Refrigerator

Revolving—Automatic Panicproof

Atchison Revolving Door Co.	10/26
G.B.C.	10/27
General Bronze Corp.	7/16; 10/27
International Revolving Door Co.	10/28
Van Kannel Revolving Door Co.	10/29
Specifications	10/26; 10/27; 10/28; 10/29

Rolling Steel

Akbar	10/22
Alsteel-Dors	10/18
Alstele	10/5
Co-Bal-Dors	10/18
Cornell Iron Works, Inc.	10/20
Detroit Steel Products Co.	11/5
Fenestra	11/5
Firecraft Door Co.	10/5
Fold-Up-Dors	10/18
FyeR-Wall	18/22
Johnson, Geo. W., Mfg. Co.	10/21
Kinnear Mfg. Co.	10/22
Llenroc	10/20
Mahon, R. C., Co.	10/24
Mecco	10/25
Moeschl-Edwards Corrugating Co., Inc.	10/25
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Richmond Fireproof Door Co.	10/16
Roanoke Iron & Bridge Works, Inc.	23/13
St. Louis Fire Door Co.	10/18
Superior	10/22
Truscon Steel Co.	11/12
Wilson, J. G., Corp.	10/23
Specifications	10/16; 10/22

Rolling Wood

Circle A	20/22
Kinnear Mfg. Co.	10/22
Swedish Venetian Blind Co.	20/23

Round House

See Doors—Rolling—Steel

Screen

See Screens—Insect

Doors—Cont.

Sheet Steel

<i>All-Steel</i>	6/23
<i>Alstele</i>	10/5
<i>Carey</i>	25/37
<i>Ceco</i>	3/69
Concrete Engineering Co., Inc.	3/69
Cornell Iron Works, Inc.	18/17
Durabilt Steel Locker Co.	18/18
Federal Steel Sash Co., Inc.	11/6
Firecraft Door Co.	10/5
<i>Float-Over</i>	18/17
<i>FyeR-Ward</i>	18/22
Kinnear Mfg. Co.	10/22
Mesker Bros. Iron Co.	11/11
Miami Cabinet Div., Philip Carey Co.	25/37
<i>Morgan</i>	11/12
<i>R-W</i>	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Richmond Fireproof Door Co.	10/16
Roanoke Iron & Bridge Works, Inc.	23/13
<i>Rol-Top</i>	10/22
St. Louis Fire Door Co.	10/18
Security Fire Door Co.	10/17
<i>Tertel</i>	10/17
Truscon Steel Co.	11/12
Vulcan Rail & Construction Co.	6/23
Specifications	11/11

Showcase

American 3 Way-Luxfer Prism Co.	9/23
<i>Himco</i>	17/17
Himmel Brothers Co.	17/17
Kawneer Co.	17/18
Pittsburgh Plate Glass Co.	17/1
<i>3 Way</i>	9/23
See also	17/16

Shower Stall—Glass

Fiat Metal Mfg. Co.	25/14
<i>Gem</i>	25/16
Ketcham, G. M., Mfg. Corp.	25/15
Lehman Sprayshield Co.	25/16
<i>Mermaid</i>	25/16
Pittsburgh Plate Glass Co.	17/1
<i>Swan</i>	25/16
<i>Viking</i>	25/16
See also	22/14; 23/11

Shower Stall—Metal

See Partitions—Toilet, Shower or Urinal—Metal

Sidewalk—Illuminating

See 9/24

Sidewalk—Metal or Vault Light—Safely Guarded—Automatically Opened and Closed

Canton Foundry & Machine Co.	6/1
<i>Dean</i>	22/46
Eliau, Frank, & Co.	26/111
G&G Hoist Corp.	26/112
Kiesling, John W., & Son, Inc.	30/6
Potts Ash Hoist Corp.	26/113
Richards & Kelly Mfg. Co.	9/25
Washburn & Granger, Inc.	22/46
Specifications	6/1

Sidewalk—Opening and Closing Devices for

<i>Dean</i>	22/46
G&G Hoist Corp.	26/112
Potts Ash Hoist Corp.	26/113
Washburn & Granger, Inc.	22/46

Sidewalk—Vault Light

American 3 Way-Luxfer Prism Co.	9/23
Richards & Kelly Mfg. Co.	9/25
<i>3 Way</i>	9/23
See also	6/1

Sliding, Folding, etc.—Wood or Metal

Art Metal Construction Co.	10/2
Barber-Colman Co.	18/15
<i>Barcol OVERdoor</i>	18/15
Bayley, William, Co.	11/2
Better Bilt Door Div. of Frederick Kaiser Products, Inc.	18/16
Crooks, W. D., & Sons.	10/31
Detroit Steel Products Co.	11/5
<i>Fenestra</i>	11/5
Hamlin, Irving	13/34

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Doors—Cont.

Sliding, Folding, etc.—Wood or Metal—Cont.

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Kinnear Mfg. Co.	10/22
McKee Door Co.	18/21
Mesker Bros. Iron Co.	11/11
Overhead Door Corp.	18/20
Peelle Co.	10/15
<i>R-W</i>	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Richmond Fireproof Door Co.	10/16
<i>Rol-Top</i>	10/22
St. Louis Fire Door Co.	10/18
<i>Super-Way</i>	18/22
<i>Swing-Fold</i>	10/16
Truscon Steel Co.	11/12
Wilson, J. G., Corp.	10/23
Specifications	10/15; 10/16; 11/11; 11/12

Sliding or Swinging—Metal Clad

See Doors—Metal Covered

Solid Wood, Metal, etc.

See Specific Type

Sound Retarding

<i>Acoustic Masterwalls</i>	20/4
<i>Circle A</i>	20/22
<i>Evanston</i>	13/34
Hamlin, Irving	13/34
Hardwood Products Corp.	10/32
Hauserman, E. F., Co.	20/4
Horn Folding Partition Co.	13/35; 20/21
Mitchell, Robert, Mfg. Co.	13/36
Newcastle Products, Inc.	20/22
Peelle Co.	10/15
<i>Riverbank</i>	10/32
Riverbank Insulating Door Co.	13/37
<i>Selfold</i>	20/21
<i>Trimount</i>	13/36
Specifications	13/35; 13/36; 13/37; 20/21

Stack

See Doors—Ash Pit, Trap or Cleanout

Steel

See Doors—Sheet Steel

Telescoping

See Doors—Vertical Sliding or Telescoping

Tin Clad

See Doors—Metal Covered

Toilet—Steel

Ebco Mfg. Co.	20/13
<i>Ferrometal</i>	20/16
Fiat Metal Mfg. Co.	20/15
<i>Flushmetal</i>	20/14
Flush-Metal Partition Corp.	20/14
<i>Krinlac</i>	20/13
<i>Lawson Milwaukee</i>	20/16
<i>Metal-flush</i>	20/7
<i>Metalunit</i>	20/18
Mills Co.	20/7
Milwaukee Stamping Co.	20/16
<i>Panelmetal</i>	20/14
<i>Parcolite</i>	20/13
Sanymetal Products Co., Inc.	20/17
<i>Silentsteel</i>	20/13
<i>Sturdibilt</i>	20/13
Weis, Henry, Mfg. Co., Inc.	20/18
<i>WeiSteel</i>	20/18
Specifications	20/15; 20/16; 20/18

Tubular Steel

See Doors—Hollow Metal

Vault Front

Diebold Safe & Lock Co.	23/6
Herring-Hall-Marvin Safe Co.	23/7
Mosler Safe Co.	23/9
<i>Triumph</i>	23/6
York Safe and Lock Co.	23/8

Veneered—Fire Resisting Asbestos and/or Wood

Hardwood Products Corp.	10/32
Mitchell, Robert, Mfg. Co.	10/34
<i>Pyrono</i>	10/34
<i>Riverbank</i>	10/32
Specifications	10/32; 10/34

Veneered—Phenolic Fiber

Formica Insulation Co.	15/15
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Doors—Cont.

Veneered—Wood

Crooks, W. D., & Sons.....	10/31
Hardwood Products Corp.....	10/32
Huttig Mfg. Co.....	11/17
Key-Veneered	10/34
Laminex	10/36
McMillen R., Co.....	10/33
Mitchell, Robert, Mfg. Co.....	10/34
Pyrono	10/34
Riverbank	10/32
Roddis Lumber and Veneer Co.....	10/35
Wheeler Osgood Sales Corp.....	10/36
See also	11/13; 11/16; 21/26; 22/2
Specifications.....	10/31; 10/33; 10/34; 10/35; 10/36

Ventilator Paneled

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Vertical Lift

Cornell Iron Works, Inc.....	10/20
McKee Door Co.....	18/21
Truscon Steel Co.....	11/12
See also	18/18

Vertical Sliding or Telescoping

Detroit Steel Products Co.....	11/5
Fenestra	11/5
Fyrgard	10/16
Kiesling, John, W., & Son, Inc.....	30/6
Kinnear Mfg. Co.....	10/22
McKee Door Co.....	18/21
Peelle Co.....	10/15
Richmond Fireproof Door Co.....	10/16
St. Louis Fire Door Co.....	10/18
Sec-Tel	10/17
Security Fire Door Co.....	10/17
Telco	10/15
Truscon Steel Co.....	11/12
Vertel	10/17
Wal-El-Dors	10/18
See also	18/18; 22/24
Specifications	10/15; 11/12

Weatherstripping

See Weatherstrips—Metal—for Double Hung Windows, Casement, Doors, Transoms, etc.	
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Wood—Metal Frame

(See also Frames)	
Mecco	10/10
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.....	18/22
Super-Way	18/22

Wood—Sliding, Folding, etc.

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Wood—Solid

Curtis Companies Service Bureau.....	10/30
Durabilt Steel Locker Co.....	18/18
Hardwood Products Corp.....	10/32
Huttig Mfg. Co.....	11/17
Roddis Lumber and Veneer Co.....	10/35
Wheeler Osgood Sales Corp.....	10/36
WOCO	10/36
See also	10/33; 11/13; 11/16; 21/26; 22/2
Specifications	10/36

X-Ray Protective

Crooks, W. D., & Sons.....	10/31
Hamlin, Irving	13/34
Kinnear Mfg. Co.....	10/22
Mitchell, Robert, Mfg. Co.....	10/34; 13/36
Ray Proof Corp.....	13/47
Roddis Lumber and Veneer Co.....	10/35
Trimount	13/36
See also	10/32

Downspouts

Metal

See Pipe—Conductor	
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Drain

Boards—Linoleum Composition

Armstrong Cork Products Co.....	15/44
DeLuxe	22/17
Imperial	22/17
Perma Sheen.....	22/17
Tracy Mfg. Co.....	22/17

Drain—Cont.

Boards—Nickel Copper Alloy

Elkay Mfg. Co.....	25/13
Inco	22/16
International Nickel Co., Inc.....	22/16; 25/24
Monel Metal.....	22/16; 25/24
Silvi Sheen.....	22/17
Straightline	22/16
Streamline	22/16
Sturdibilt	25/13
Tracy Mfg. Co.....	22/17
Whitehead	22/16

Boards—Phenolic Fiber

Formica Insulation Co.....	15/15
Micarta	12/19; 15/21
Micarta-Asbestos	15/21
Micarta-Plywood	15/21
Micarta-Prestdwood	15/21
Micarta-Wemcore	15/21
United States Plywood Co., Inc.....	12/19
Westinghouse Electric & Mfg. Co.....	15/21

Boards—Rubber

Coste, Paul, Inc.....	15/37
Royalite	15/37
See also	15/41

Boards—Sink

See Sinks; Tops—Sinks, etc.	
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Boards—Stainless Steel

See Drain—Boards—Nickel Copper Alloy	
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Pipe

See Pipe—Drain	
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Pipe Packing

See Packing—Drain Pipe	
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Drainers

Cellar

See Ejectors—Hydraulic—Automatic—Cellar Draining; Pumps—Bilge	
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Drains

Areaway

See Drains—Floor, Yard, etc.	
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Backwater Valve

Compound Injector & Specialty Co.....	24/23
Crampton-Farley Brass Co.....	24/24
Dehn's	24/23
Josam Mfg. Co.....	24/27
Peerless	24/23
Re-Tar-Do	24/23
San-Seal-O	24/24
Signet	24/24
Wade Mfg. Co.....	24/28
Zurn, J. A., Mfg. Co.....	24/29

Double Drainage

Josam Mfg. Co.	24/27
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Floor, Yard, etc.

Anti-Clog	24/22
Compound Injector & Specialty Co.....	24/23
Covert, H. W., Co.....	24/22
Crampton-Farley Brass Co.....	24/24
Dehn's	24/23
Drain-Dri	24/35
Duriron Co., Inc.....	24/14
Fiat Metal Mfg. Co.....	25/14
Flocontrol	24/23
Josam Mfg. Co.....	24/27
Peerless	24/23
Re-Tar-Do	24/23
San-Seal-O	24/24
Signet	24/24
Wade Mfg. Co.....	24/28
Yeomans Brothers Co.....	24/35
Zurn, J. A., Mfg. Co.....	24/29
See also	6/1
Specifications	24/22

Flushing

Wade Mfg. Co.....	24/28
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Drains—Cont.

Garage—Mud Arresting

<i>Anti-Clog</i>	24/22
Compound Injector & Specialty Co.	24/23
Covert, H. W., Co.	24/22
<i>Dehn's</i>	24/23
Josam Mfg. Co.	24/27
<i>Peerless</i>	24/23
<i>Re-Tar-Do</i>	24/23
Wade Mfg. Co.	24/28
Specifications	24/22

Gutter

See Drains—Roof

Non-Clog

<i>Anti-Clog</i>	24/22
Covert, H. W., Co.	24/22
Josam Mfg. Co.	24/27
Specifications	24/22

Non-clog—Triple Drainage

Josam Mfg. Co.	24/27
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Oil or Grease Separating

<i>Air-Way</i>	24/21
Boosey, Norman, Mfg. Co.	24/21
Compound Injector & Specialty Co.	24/23
<i>Dehn's</i>	24/23
<i>GeM</i>	24/23
<i>Greaseptor</i>	24/29
Josam Mfg. Co.	24/27
<i>Josam-Marsh</i>	24/27
Wade Mfg. Co.	24/28
Zurn, J. A., Mfg. Co.	24/29
See also	24/19

Refrigerator

Josam Mfg. Co.	24/27
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Roadway

See Gratings—Drainage—Roadway

Roof, Gutter or Promenade

Æolus Dickinson Industrial Div. Paul Dickinson, Inc.	9/9
Barrett Co.	8/3
Dickinson	9/9
Harrington, L. W.	24/25
<i>Holt</i>	8/3
Josam Mfg. Co.	24/27
Louden Machinery Co.	23/39
Mahon, R. C., Co.	24/26
Wade Mfg. Co.	24/28
Zurn, J. A., Mfg. Co.	24/29
See also	24/15
Specifications	8/3

Scupper

Æolus Dickinson Industrial Div. Paul Dickinson, Inc.	9/9
<i>Air-Gate</i>	9/9
Covert, H. W., Co.	24/22
Dickinson	9/9
Josam Mfg. Co.	24/27
<i>Watertite</i>	24/22

Shower or Urinal

See Drains—Floor, Yard, etc.

Stable Gutter

See Drains—Roof, Gutter or Promenade

Swimming Pool

(See also *Swimming Pool—Drains, Strainers and Fittings*)

Everson Filter Co.	23/30
Josam Mfg. Co.	24/27
Roberts Filter Mfg. Co.	23/32
Zurn, J. A., Mfg. Co.	24/29

Trap

Compound Injector & Specialty Co.	24/23
Crampton-Farley Brass Co.	24/24
<i>Dehn's</i>	24/23
Josam Mfg. Co.	24/27
<i>Peerless</i>	24/23
<i>Re-Tar-Do</i>	24/23
<i>San-Seal-O</i>	24/24
<i>Signet</i>	24/24
Wade Mfg. Co.	24/28
Zurn, J. A., Mfg. Co.	24/29
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Drains—Cont.

Urinal

See Drains—Floor, Yard, etc.

Draperies

See 21/27

Drawer

Slides

<i>Garcy</i>	7/15
<i>K-Veniences</i>	18/41
Knappe & Vogt Mfg. Co.	18/41
<i>Maforco</i>	22/23
Market Forge Co.	22/23

Drawers

Steel Shelving

See Shelving—Steel

Drawn

Metal Shapes

See Shapes—Non-structural

Dressers

Kitchen

See Cabinets—Kitchen

Dressing

Cabinets

See Cabinets—Dressing

Dressings

Floor

See Paint; Cleaners, Polishers and Preservatives; Preservatives—Wood

Drills

Electric—Portable

Ryerson, Joseph T., & Son, Inc. 3/51

Drinking Water

Coolers

See Coolers; Fountains—Drinking

Fountains

See Fountains—Drinking

Systems

See Fountains—Drinking; Refrigerating Systems—Drinking Water; Refrigerating and Ice Making—Machinery and Plants; Coolers

Drives

Motor—For Operating Doors, Bridges, Curtains, etc.

Babcock-Davis Corp.	10/13
Kinnear Mfg. Co.	10/22
<i>Mono-Tandem</i>	10/13
<i>Mono-Wheel</i>	10/13

Dryers

Air—Fan Blast

See Fans—Ventilating or Exhaust; Blowers—Pressure or Volume—Air Conditioning

Clothes—Centrifugal

See Extractors—Laundry—Centrifugal

Clothes—Coal, Electric, Gas or Steam Heated

Janes & Kirtland, Inc.	22/9
<i>Mecco</i>	10/25
St. Charles Mfg. Co.	22/13
<i>White House</i>	22/9
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Clothes—Rack Type

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Clothes—Tumbler

<i>Minute Man</i>	22/33
<i>Premier</i>	22/33
Troy Laundry Machinery Div. of American Machine & Metals Mfg. Corp.	22/33

Ducts

Electrical

See Conduit—Electrical—Underfloor

Pipe

See Conduit—Tin or Terne Plate

Sheets Metal and Filling—Heating, Ventilating, Air Conditioning

Ducturns 26/55

Tuttle & Bailey, Inc. 26/55

Dumbwaiter

Doors—Counterbalanced

Bi-Parting 30/6

Kiesling, John W., & Son, Inc. 30/6

Peelle Co. 10/15

Richmond Fireproof Door Co. 10/16

St. Louis Fire Door Co. 10/18

Seco 10/17

Security Fire Door Co. 10/17

See also 10/5; 30/2

Specifications 10/15; 10/16; 10/17; 30/6

Doors—Hollow Metal

Art Metal Construction Co. 10/2

Richmond Fireproof Door Co. 10/16

St. Louis Fire Door Co. 10/18

Seco 10/17

Security Fire Door Co. 10/17

See also 10/5

Specifications 10/16

Doors—Metal Covered—Aluminum, Copper, Bronze, Steel, etc.

Bi-Partins 30/6

Kiesling, John W., & Son, Inc. 30/6

Richmond Fireproof Door Co. 10/16

St. Louis Fire Door Co. 10/18

Seco 10/17

Security Fire Door Co. 10/17

See also 10/11

Specifications 10/16; 10/17

Doors—Steel Plate

Peelle Co. 10/15

Richmond Fireproof Door Co. 10/16

St. Louis Fire Door Co. 10/18

Seco 10/17

Security Fire Door Co. 10/17

Specifications 10/15; 10/16; 10/17

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See Enclosures—Elevator

Dumbwaiters

(See also Elevators; Hoists; Lifts)

Doors for

See Dumbwaiter—Doors

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Beckwith Elevator Co., Inc. 30/1

Capital Lift & Mfg. Co. 30/3

Chelsea Elevator Co. 30/2

Economy 30/3

Energy Elevator Co. 30/4

Elevator Supplies Co., Inc. 30/13

Kiesling, John W., & Son, Inc. 30/6

Otis Elevator Co. 30/8

Payne, F. S., Co. 30/9

Roto-Waiter 30/10

Sedgwick Machine Works. 30/10

Steel Rail Waiter 30/6

Telelevator 30/13

See also 30/11; 30/12

Specifications 30/4; 30/6

Hand Power

Beckwith Elevator Co., Inc. 30/1

Capital Lift & Mfg. Co. 30/3

Chelduogear 30/2

Chelgear 30/2

Chelnogear 30/2

Chelsea Elevator Co. 30/2

Energy Elevator Co. 30/4

FDCG 30/10

Kiesling, John W., & Son, Inc. 30/6

Little Beauty 30/4

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Dumbwaiters—Cont.

Hand Power—Cont.

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Little Giant 30/4

Matot, D. A. 30/7

Sedg-Versal 30/10

Sedgwick Machine Works. 30/10

Steel Rail 30/6

Specifications 30/4; 30/6; 30/10; 30/12

Hydraulic

Beckwith Elevator Co., Inc. 30/1

Tube

Matot, D. A. 30/7

Sedgwick Machine Works. 30/10

Telewaiter 30/2

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Specifications 30/10

Undercounter

Beckwith Elevator Co., Inc. 30/1

Capital Lift & Mfg. Co. 30/3

Energy Elevator Co. 30/4

Matot, D. A. 30/7

Otis Elevator Co. 30/8

Sedgwick Machine Works. 30/10

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Dumps

Ash—Fireplace

Covert, H. W., Co. 26/102

Donley Brothers Co. 26/104

Dutch Oven 26/104

Equal-Aire Incinerator Div. of Sargent Building

Specialties Co. 22/39

Kerner Incinerator Co. 22/41

Kernerator 22/41

Milcor Steel Co. 25/27

Peerless Mfg. Corp., Inc. 26/106

See also 6/1; 6/3; 14/13; 26/45; 26/102

Dustproofing Compounds

Cement and Concrete

Adaflint 4/1

Adensite Co., Inc. 4/1

Agatex 4/21

American Crayon Co. 16/1

Anti-Hydro Waterproofing Co. 4/2

Aquabar Waterproofing Products, Inc. 4/3

Aquatite 4/3

Armortop 4/2

Art-Roc 4/21

B.C.C. 4/6

Building Chemicals Corp. 4/6

Certain-teed Products Corp. 16/10

Colored Master Mix 4/13

Colored Metalicron 4/13

Colormix 4/13

Colorundum 4/9

Cretemix "A" 4/22

Dehydratine No. 80 4/9

Durocon 4/3

Duro-Mix 4/3

Dust-X 14/20

Dycrome 4/13

Ferricon 4/21

Ferro-Fax 4/9

Filtite 16/1

Flintox 4/20

Floortex 4/3

Glazecoat 4/13

Hard-n-tyte 4/6

Hillyard Chemical Co. 16/2

Horn, A. C., Co. 4/9

Hornstone Crystals 4/9

Hurundum 4/21

Iron Clad Crystals No. 7B 4/3

Ironco 4/3

Kemi-Kote 4/22

Lapidolith 16/4

Lithochrome 9/23

Loomis, W. H., Talc Corp. 4/11

Loomite 4/11

Master Builders Co. 4/13

Master Mix 4/13

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Maximent Co.	15/9
Merco	16/21
Metalicron	4/13
Nevins, Oscar W., Co., Inc.	4/14
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Omicron	4/13
Penetrem	4/22
Pozzolith	4/13
R.I.W.	4/20
Reardon Co.	16/28a
Saniseal	4/13
Sherwin-Williams Co.	16/29
Solvay Sales Corp.	4/17
Sonneborn, L., Sons, Inc.	16/4
Standard Waterproofing Corp.	4/19
Stanwaco	4/19
Super-Colorseal	4/13
Suresal	4/14
Toch Brothers, Inc.	4/20
Tox-Mix	4/20
Tremco Mfg. Co.	4/22
Trimix	16/4
Truscon Laboratories	4/21
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Specifications	4/1; 4/2; 4/3; 4/13; 4/21; 16/4; 16/28a; 16/29

Dyes

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Berrystone	16/8
Cabot, Samuel, Inc.	16/9
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du Pont de Nemours, E. I., & Co., Inc.	16/15
Flo-lac	16/29
Handcraft	16/29
Minwax Co., Inc.	4/12
Murphy Varnish Co.	16/23
O'Brien Varnish Co.	16/27
Pitcairn	17/1
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<i>Filtite</i>	16/1
<i>Flamingo</i>	3/40
Horn, A. C., Co.	4/9
<i>Hydratite</i>	4/9
Master Builders Co.	4/13
<i>Old Faithful</i>	16/1
Pittsburgh Plate Glass Co.	17/1
<i>Rex</i>	14/25
Riverton Lime & Stone Co., Inc.	3/40
Silica Products Co.	4/16
<i>Staybrite</i>	4/9
Truscon Laboratories	4/21
<i>Wallhide</i>	17/1
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<i>Hydrocide</i>	4/18
<i>Kaysan</i>	16/1
<i>Old Faithful</i>	16/1
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	4/18
Toch Brothers Inc.	4/20
<i>Toxbro</i>	4/20
<i>Tri-Seal</i>	16/29

Wood—Paste

Berry Brothers, Inc.	16/8
<i>Berrycraft</i>	16/8
du Pont de Nemours, E. I., & Co., Inc.	16/15
<i>Hydrocide</i>	4/18
<i>Kaysan</i>	16/1
Muralo Co., Inc.	16/24
Murphy Varnish Co.	16/23
O'Brien Varnish Co.	16/27
<i>Old Faithful</i>	16/1
<i>Pitcairn</i>	17/1
Pittsburgh Plate Glass Co.	17/1
<i>Pyramid</i>	16/27
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	4/18
<i>Spackle</i>	16/24
<i>Tector</i>	17/1
<i>Wheeler's</i>	16/15
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X-Ray Safety Storage

See Cabinets—X-Ray Film Safety Storage

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<i>Climator</i>	26/14

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<i>Dustop</i>	26/44
<i>Filticooler</i>	26/65
<i>Hold-Heat</i>	26/15
Holland Furnace Co.	26/10
Industrial Materials Division Owens-Illinois Glass Co.	26/44
Mueller, L. J., Furnace Co.	26/14
<i>Renu</i>	26/43
<i>Renu-Vent</i>	26/43
Russell Electric Co.	26/15
Sturtevant, B. F., Co.	26/65
<i>Thruway</i>	26/43
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Everson Filter Co.	23/30
Permutit Co.	24/49
Puro Filter Corporation of America.	24/50
Roberts Filter Mfg. Co.	24/52
Scaife, Wm. B., & Sons Co.	24/51

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Water

See Filters—Gravity or Pressure

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<i>Hil-Glo</i>	16/2
Hillyard Chemical Co.	16/2
Huntington Laboratories, Inc.	16/3
<i>Seal-O-San</i>	16/3
<i>Special Gym Finish</i>	16/2

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<i>ADT</i>	29/1
<i>Aero</i>	29/1
American Automatic Electric Sales Co.	29/12
American District Telegraph Co.	29/1
<i>Autelco</i>	29/12
<i>Dualarm</i>	29/5
<i>Faraday</i>	29/8
<i>Fire Eye</i>	29/6
Gamewell Co.	29/5
Holtzer-Cabot Electric Co.	29/6
Signal Engineering & Mfg. Co.	29/7
<i>Sprink-la-stat</i>	29/5
Standard Electric Time Co.	29/9
Stanley & Patterson, Inc.	29/8
<i>Wheelock</i>	29/7
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Alarm Systems—Electric—Power Supply for

See Lighting and Power Systems—Electric

Detector Systems

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Escapes—Sliding Pole

McIntire, F. N., Brass Works.	23/11
Specifications	23/11

Escapes—Spiral

Haslett Chute and Conveyor Co.	22/34
Logan Co.	6/22
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Escapes—Standard

Logan Co.	7/18
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Escapes—Straight Slide

Haslett Chute and Conveyor Co.	22/34
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Logan Co.	6/22
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Exit Devices

McIntire, F. N., Brass Works.	23/11
<i>Von Duprin</i>	18/42
Vonnegut Hardware Co.	18/42
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Extinguishers

Allen, W. D., Mfg. Co.	23/3
<i>Electra</i>	27/20
Elkhart Brass Mfg. Co.	23/4
<i>First Aid</i>	23/3
<i>Reddy</i>	23/3
West Dodd Lightning Conductor Corp.	27/20

Extinguishing Apparatus

Allen, W. D., Mfg. Co.	23/3
<i>Electra</i>	27/20
Elkhart Brass Mfg. Co.	23/4
West Dodd Lightning Conductor Corp.	27/20
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Hose

Allen, W. D., Mfg. Co.	23/3
Elkhart Brass Mfg. Co.	23/4
<i>Flax Line</i>	23/3
<i>Flax Tow</i>	23/3

Hose Cabinets

<i>Alenco</i>	23/3
Allen, W. D., Mfg. Co.	23/3
Elkhart Brass Mfg. Co.	23/4
<i>Hoosier</i>	23/4
<i>Nella</i>	23/3
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Allen, W. D., Mfg. Co.	23/3
Elkhart Brass Mfg. Co.	23/4

Prevention Systems

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Racks and Reels

<i>Alenco</i>	23/3
Allen, W. D., Mfg. Co.	23/3
<i>Bowes</i>	23/3
Elkhart Brass Mfg. Co.	23/4

Resistant Treatments of Lumber

American Lumber & Treating Corp.	12/1
Protexol Corp.	12/5
<i>Wolman Salts</i>	12/1

Resisting Wood Doors

See Doors—Veneered—Flush and Paneled—of Fire Resisting Wood

Siamese Hose Connections

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Allen, W. D., Mfg. Co.	23/3
Elkhart Brass Mfg. Co.	23/4

Sprinkler System Supervision

<i>ADT</i>	29/1
American District Telegraph Co.	29/1
Gamewell Co.	29/5
<i>Sprinklarm</i>	29/5

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McIntire, F. N., Brass Works.	23/11
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Chamberlin Metal Weather Strip Co., Inc.	19/2
Colonial Fireplace Co.	26/101
Donley Brothers Co.	26/104
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Nu-Stile	19/2
Peerless Mfg. Corp., Inc.	26/106
Sloane, W. & J.	26/107
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Colonial Fireplace Co.	26/101
Covert, H. W., Co.	26/102
Glo-Hot	26/101
Heatilator Co.	26/105
Superior Fireplace Co.	26/108

Ash Dumps

Covert, H. W., Co.	26/102
Donley Brothers Co.	26/104
Dutch Oven	26/104
Equal-Aire Incinerator Div. of Sargent Building	
Specialties Co.	22/39
Kerner Incinerator Co.	22/41
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Milcor Steel Co.	25/27
Peerless Mfg. Corp., Inc.	26/106
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Colonial Fireplace Co.	26/101
Covert, H. W., Co.	26/102
Donley Brothers Co.	26/104
Improved	26/102
Majestic Co.	6/3
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Peerless Mfg. Corp., Inc.	26/106
Rotary	26/102
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Franklin

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Gas Heaters

See Heaters—Air—Gas—Fireplace or Mantel

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See Grates—Fireplace; Fireplace—Accessories

Grates—Electric

See Heaters—Air—Electric—Fireplace or Mantel

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Fireproofing Liquid

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Sureseal	4/14
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American Brass Co.	7/3
Electrumite Steeltubes	27/3
Everdur	7/3
Frets-Moon	27/3
G-E	27/8
General Electric Co.	27/8
Steel and Tubes, Inc.	27/3
Wiremold Co.	27/4

Fire Hose and Tubing

Elkhart Brass Mfg. Co.	23/4
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Pipe—Ammonia

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Cop-R-Loy	24/12
Grinnell Co., Inc.	26/85; 26/95
Republic Steel Corporation	24/11
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Brass Co.	24/7
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American Steel Furniture Co.	20/12
Bommer Spring Hinge Co.	18/26
Fiat Metal Mfg. Co.	20/15
Flush-Metal Partition Corp.	20/14
Lawson Milwaukee	20/16
Mills Co.	20/7
Milwaukee Stamping Co.	20/16
Sanymetal Products Co., Inc.	20/17
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Casement Windows

See Hardware—Casement Window

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See Lighting—Fixtures—Electric; Lamps and Brackets; etc.

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Bases

(See also Ornamental—Metal Work)

Babcock-Davis Corp.	6/32
Lingo, John E., & Son, Inc.	6/33
Pole and Tube Works, Inc.	6/34
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Fixtures for

(Including: Halyards Tops for Wood or Steel Poles, Cleats, Braces, etc.)

American Mast & Spar Corp.	6/31
B-D	6/32
Babcock-Davis Corp.	6/32
Pole and Tube Works, Inc.	6/34
Lingo, John E., & Son, Inc.	6/33

Metal—Steel, Aluminum, Bronze, etc.

(Including: Conetaper, Entasis Taper and Graduated)

American Mast & Spar Corp.	6/31
Babcock-Davis Corp.	6/32
Easy Access	6/32
Lingo, John E., & Son, Inc.	6/33
Pole and Tube Works, Inc.	6/34
Traffic & Street Sign Co.	6/35
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American Blue Stone Co..... 3/13; 6/7
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Even-Tone 15/2
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Hood, B. Mifflin, Co..... 15/1
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American Blue Stone Co..... 3/13
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J-M 8/7
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Sisalkraft Co. 13/1
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Barber Asphalt Co..... 8/2
Barco-Dex 8/21
Barnett Canvas Goods & Bag Co., Inc..... 8/21
Barrell, William L., Co., Inc..... 8/20
Barrett Co. 8/3
Bird & Son, inc..... 8/4
Brisk Waterproofing Co..... 4/5
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See Specific Kind of Flooring; as: Rugs and Carpets;
Linoleum; Cork—Carpet; Flooring—Rubber Tile

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Milcor Steel Co.....	3/75
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USG	8/10
Uvalde Rock Asphalt Co.	15/33
Specifications	15/26; 15/28; 15/30; 15/31; 15/35; 15/44; 15/46; 15/63

Beech

See Flooring—Wood—Maple, Beech or Birch

Birch

See Flooring—Wood—Maple, Beech or Birch

Bluestone

Ambluco Non-Slip	6/7
American Blue Stone Co.	6/7
Specifications	6/7

Brick

See Brick—Floor; Brick—Paving

Flooring—Cont.

Canvas

Barco-Dex	8/21
Barnett Canvas Goods & Bag Co., Inc.	8/21
Barrell, William L., Co., Inc.	8/20
Con-Ser-Tex	8/20

Cement

See Cement—Portland; Cement—Mastic—for Laying Wood Floors and Tile Flooring

Cement—Finish for

(See also Hardeners and Densifiers—Cement and Concrete)

Adensite Co., Inc.	4/1
Britenzit	16/2
Colorundum	4/9
Dust-X	14/20
Ferro-Fax	4/9
Hillyard Chemical Co.	16/2
Horn, A. C., Co.	4/9
Koncrex	4/9
Lapidolith	16/4
Maximent Co.	15/9
PurTone	4/1
Rocor	14/20
Shine-All	16/2
Sonneborn, L., Sons, Inc.	16/4

Cement—Pre-mixed

Maximent Co.	15/9
Rocor	14/20

Cement and Terrazzo—Curing and Protection

Britenzit	16/2
Hillyard Chemical Co.	16/2
Horn, A. C., Co.	4/9
Hornlux	4/9
Hornstone Crystals	4/9
Lapidolith	16/4
Ruberoid Co.	8/18
Safe-n-dry	8/18
Shine-All	16/2
Sisalkraft Co.	13/1
Sonneborn, L., Sons, Inc.	16/4
Specifications	13/1

Contractors

See Specific Type of Flooring

Cork Composition

Armstrong Cork Products Co.	15/44
Congoleum-Nairn Inc.	15/45
Everlastic	15/31
Kennedy, David E., Inc.	15/31
Linotile	15/44
Sealex Treadlite	15/45
United Cork Cos.	13/45
Specifications	15/31; 15/44; 15/45

Cork Tile

(See also Insulation)

Armstrong Cork Products Co.	15/44
Bevel-Tile	15/31
Corinco	15/42
Cork Insulation Co., Inc.	15/42
Jointite	13/44; 15/43
Kennedy, David E., Inc.	15/31
Mundet Cork Corp.	13/44; 15/43
Pabco	15/46
United Cork Cos.	13/45
Specifications	15/31; 15/43; 15/44

Finishes

See Specific Material or Specific Type of Flooring; Cleaners, Polishers and Preservatives

Glass

See	9/23
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Grating

See Gratings—Sidewalk, Area, etc.

Grids

See Grids—Flooring

Hardwood

See Specific Kind as: Flooring—Wood—Oak; etc.

Industrial

See Specific Type of Flooring

Flooring—Cont.

Linoleum

(Including: Plain, Jaspé, Inlaid, Inset, Tile, Embossed, Printed and Battleship)

<i>Accoflor</i>	15/44
<i>Adhesive Sealex</i>	15/45
<i>Armstrong Cork Products Co.</i>	15/44
<i>Congoleum-Nairn Inc.</i>	15/45
<i>Linoflor</i>	15/44; 15/47
<i>Linosets</i>	15/44
<i>Linostrips</i>	15/44
<i>Marbelle</i>	15/44
<i>Marbletone</i>	15/47
<i>Pabco</i>	15/46
<i>Paraffine Cos., Inc.</i>	15/46
<i>S-B</i>	15/47
<i>Sealex</i>	15/45
<i>Sealex Veltone</i>	15/45
<i>Sloane-Blabon Corp.</i>	15/47
<i>Terano</i>	15/47
<i>Method of Laying</i>	15/47
<i>Specifications</i>	15/44; 15/45; 15/46; 15/47

Linoleum Tile

See Flooring—Cork Composition; Tile—Cork Composition

Magnesite Composition

<i>Acme Asbestos Covering & Flooring Co., Inc.</i>	15/25
<i>Acmetyle</i>	15/25
<i>Kompolite Co., Inc.</i>	15/26
<i>Marbleloid Inc.</i>	15/27
<i>X-ite</i>	15/22
<i>X-ite Corp., Div. of E. L. Bruce Co.</i>	15/22
<i>Specifications</i>	15/22; 15/25; 15/26

Maple

See Flooring—Wood—Maple, Beech or Birch

Mastic Composition

See Flooring—Asphalt Mastic—Cold

Mastic Composition Tile

See Flooring—Asphalt Tile

Mastic Laid Wood Blocks

See Flooring—Wood Block

Mastic Roll

<i>Mastipave</i>	15/46
<i>Pabco</i>	15/46
<i>Paraffine Cos., Inc.</i>	15/46
<i>Specifications</i>	15/46

Mastic Tile

See Flooring—Asphalt Tile

Mosaic

See Mosaics; Tile—Ceramic

Oak

See Flooring—Wood—Oak

Parquetry

See Flooring—Wood Block—Tongued and Grooved—Parquetry

Portland Cement—Colored—Pre-mixed

See Flooring—Cement Pre-mixed

Rubber Sheet

<i>Airpath</i>	15/38
<i>American Tile & Rubber Co.</i>	15/36
<i>Amtico</i>	15/36
<i>Coste, Paul, Inc.</i>	15/38
<i>Goodyear Tire & Rubber Co., Inc.</i>	15/39
<i>Wingfoot</i>	15/39
<i>Specifications</i>	15/38

Rubber Tile

<i>American Tile & Rubber Co.</i>	15/36
<i>Amtico</i>	15/36
<i>Armstrong Cork Products Co.</i>	15/44
<i>Coste, Paul, Inc.</i>	15/37; 15/38
<i>Goodyear Tire & Rubber Co., Inc.</i>	15/39
<i>Hood</i>	15/31; 15/40
<i>Hood Rubber Co., Inc.</i>	15/40
<i>Kennedy, David E., Inc.</i>	15/31
<i>Kompolite Co., Inc.</i>	15/26
<i>Royalite</i>	15/37
<i>Rubber Marble</i>	15/31
<i>Stedman Rubber Flooring Co.</i>	15/41
<i>Specifications</i>	15/26; 15/31; 15/37; 15/40; 15/41; 15/44

Flooring—Cont.

Slate

(See also Tile—Slate; Flagging—Slate)

<i>Allenstone</i>	8/27
<i>Matot, H. A.</i>	8/23
<i>O'Brien Brothers Slate Co., Inc.</i>	8/24
<i>Penn-Mont Pocono</i>	15/8
<i>Penn-Mont Shadowcleft</i>	15/8
<i>Rising & Nelson Slate Co.</i>	8/25
<i>Sheldon Slate Products Co., Inc.</i>	8/26
<i>Structural Slate Co.</i>	15/8
<i>Tudor Stone</i>	8/25
<i>Vermont Structural Slate Co.</i>	8/27
<i>See also</i>	8/22

Soapstone

<i>Virginia Alberene</i>	3/10
<i>Virginia Black Serpentine</i>	3/10

Stone

See Specific Type of Stone

Surfaces—for Non-slip

<i>Gym Finish</i>	16/2
<i>Hil-Glo</i>	16/2
<i>Hillyard Chemical Co.</i>	16/2
<i>Huntington Laboratories, Inc.</i>	16/3
<i>Seal-O-San</i>	16/3

Terrazzo—Aggregates for

See Terrazzo—Aggregates

Terrazzo—Cement for

<i>Atlas</i>	15/12
<i>Atlas Waterproofed White</i>	15/12
<i>Atlas White</i>	15/12
<i>Medusa-Mix</i>	3/38
<i>Medusa Portland Cement Co.</i>	3/38
<i>Stoneset</i>	3/38
<i>Universal</i>	15/12
<i>Universal Atlas Cement Co.</i>	15/12
<i>Specifications</i>	15/12

Terrazzo—Contractors for

<i>Del Turco Bros., Inc.</i>	6/9
<i>Kompolite Co., Inc.</i>	15/26
<i>Lockstrip Mfg. Corp.</i>	15/10
<i>Marbleloid Inc.</i>	15/27
<i>Specifications</i>	15/26

Terrazzo—Dividing Bars for

<i>Lockstrip Mfg. Corp.</i>	15/10
<i>Manhattan Terrazzo Brass Strip Co., Inc.</i>	15/11
<i>T.M.C.</i>	15/10
<i>Truscon Steel Co.</i>	11/12
<i>Twin Anchor</i>	15/11
<i>Specifications</i>	15/10

Terrazzo—Dividing Strips for—Plastic—Colored

<i>Vogeliner Co.</i>	15/13
<i>Specifications</i>	15/13

Terrazzo—Expansion Joints for

See Joints—Expansion—Terrazzo or Cement Floor

Terrazzo—Finish for

See Terrazzo—Floor Finish; Flooring—Cement and Terrazzo—Curing and Protection

Tile

See Specific Type of Tile; as: Tile—Ceramic; Tile—Paving; Tile—Terrazzo; Tile—Cork; Tile—Cork Composition, etc.

Wood—Air and Moisture Protection

See Paper—Building

Wood—American Walnut

<i>Diamonds</i>	15/52
<i>Harris Mfg. Co.</i>	15/52
<i>RiBac</i>	15/52
<i>Wood-Mosaic Co., Inc.</i>	15/57
<i>Specifications</i>	15/52

Wood Block—Built-up

<i>Bloxonend</i>	15/58
<i>Carter Bloxonend Flooring Co.</i>	15/58
<i>Ironbound</i>	15/56
<i>Storm Flooring Co.</i>	15/56
<i>Universal</i>	15/56
<i>Worth Lumber Co.</i>	15/61
<i>Worthwood</i>	15/61
<i>Specifications</i>	15/61

Flooring—Cont.

Wood Block—Contractors for

Kennedy, David E., Inc.	15/31
National Wood Products Co.	15/55
See also	15/31

Wood Block—Creosoted or Treated

<i>Bloxonend</i>	15/58
Carter Bloxonend Flooring Co.	15/58
<i>Creopine</i>	15/60
<i>Evanite</i>	15/55
<i>Everlevel</i>	15/55
Jennison-Wright Co.	15/59
<i>Jet-Brite</i>	15/59
<i>Kreolite</i>	15/59
<i>Laminite</i>	15/55
<i>Lite-Color</i>	15/59
National Wood Products Co.	15/55
Southern Wood Preserving Co.	15/60
Worth Lumber Co.	15/61
<i>Worthwood</i>	15/61
See also	23/39
Specifications	15/19; 15/60; 15/61

Wood Block—Mastic Set

See Flooring—Wood—Mastic Set—Wood Block

Wood Block—Natural or Untreated

<i>Bloxonend</i>	15/58
Carter Bloxonend Flooring Co.	15/58
Jennison-Wright Co.	15/59
<i>Kreolite</i>	15/59
Plywood Tile and Floor Co., Inc.	15/19
Worth Lumber Co.	15/61
<i>Worthwood</i>	15/61
See also	15/31
Specifications	15/59; 15/61

Wood Block—Tongued and Grooved—Parquetry

Bradley Lumber Sales Co.	15/50
Bruce, E. L., Co.	15/51
<i>Color-Blend</i>	15/50
<i>Corner-Lock</i>	15/50
<i>Diamonds</i>	15/52
<i>Evanite</i>	15/55
Harris Mfg. Co.	15/52
<i>Ironbound</i>	15/56
MFMA	15/53
Maple Flooring Mfrs. Assn.	15/53
<i>Nail-Seal</i>	15/50
National Wood Products Co.	15/55
<i>Ready-Finished</i>	15/51
Storm Flooring Co.	15/56
<i>Unit-Wood</i>	15/51
Wood-Mosaic Co., Inc.	15/57
See also	15/19
Specifications	15/51

Wood Fiber

Armstrong Cork Products Co.	13/43
Celotex Corp.	13/16
<i>Graylite</i>	13/19
Insulite Co.	13/19
J-M	13/22
Johns-Manville	13/22
<i>Laminex</i>	12/18
<i>Nu-Wood</i>	13/26
<i>Standard</i>	13/19
<i>Temlok</i>	13/43
Wheeler Osgood Sales Corp.	12/18
Wood Conversion Co.	13/26
<i>X-ite</i>	15/22
X-ite Corp., Div. of E. L. Bruce Co.	15/22
Specifications	13/26; 13/43; 15/22

Wood Fiber—Insulation Combination

Agasote Millboard Co.	13/14
<i>Homasote</i>	13/14
<i>Restful</i>	13/14

Wood—Finish for

See Paints; Varnish; Oil; Wax; etc.

Wood—Imported Cabinet Woods

Wood-Mosaic Co., Inc.	15/57
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Wood—Laminated or Plywood

<i>Laminite</i>	15/55
National Wood Products Co.	15/55
Wheeler Osgood Sales Corp.	10/36
Wood-Mosaic Co., Inc.	15/57

Flooring—Cont.

Wood—Mahogany

Wood-Mosaic Co., Inc.	15/57
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Wood—Maple, Beech or Birch

Bradley Lumber Sales Co.	15/50
Bruce, E. L., Co.	15/51
<i>Color-Blend</i>	15/50
<i>Corner-Lock</i>	15/50
<i>Diamonds</i>	15/52
<i>Evanite</i>	15/55
Harris Mfg. Co.	15/52
<i>Ironbound</i>	15/56
MFMA	15/53
Maple Flooring Mfrs. Assn.	15/53
<i>Nail-Seal</i>	15/50
National Wood Products Co.	15/55
Plywood Tile and Floor Co., Inc.	15/19
<i>RiBac</i>	15/52
Storm Flooring Co.	15/56
<i>Universal</i>	15/56
Specifications	15/51; 15/52

Wood—Mastic Set—Strip—Built-up or Assembled; Parquet

Bradley Lumber Sales Co.	15/50
Bruce, E. L., Co.	15/51
<i>Evanite</i>	15/55
Harris Mfg. Co.	15/52
<i>Ironbound</i>	15/56
<i>Laminite</i>	15/55
National Wood Products Co.	15/55
Storm Flooring Co.	15/56
Specifications	15/51

Wood—Mastic Set—Wood Block

Bruce, E. L., Co.	15/51
Carter Bloxonend Flooring Co.	15/58
<i>Creo-pine</i>	15/60
<i>Everlevel</i>	15/55
<i>Ironbound</i>	15/56
Jennison-Wright Co.	15/59
Kennedy, David E., Inc.	15/31
<i>Kreolite</i>	15/59
<i>Kreolite Join-Tite</i>	15/59
<i>Kreolite Kountersunk</i>	15/59
National Wood Products Co.	15/55
Southern Wood Preserving Co.	15/60
Storm Flooring Co.	15/56
<i>Tite-Blox</i>	15/58
Worth Lumber Co.	15/61
See also	15/57
Specifications	15/51

Wood—Oak

Bradley Lumber Sales Co.	15/50
Bruce, E. L., Co.	15/51
<i>Color-Blend</i>	15/50
<i>Corner-Lock</i>	15/50
<i>Diamonds</i>	15/52
<i>Evanite</i>	15/55
Harris Mfg. Co.	15/52
<i>Nail-Seal</i>	15/50
National Oak Flooring Mfrs. Assn.	15/54
National Wood Products Co.	15/55
Plywood Tile and Flooring Co., Inc.	15/19
<i>RiBac</i>	15/52
Wood-Mosaic Co., Inc.	15/57
Specifications	15/51; 15/52; 15/54

Wood—Pine

Arkansas Soft Pine Bureau	12/11
Southern Pine Assn.	12/16

Wood—Plank

Bruce, E. L., Co.	15/51
Harris Mfg. Co.	15/52
<i>RiBac</i>	15/52
Wood-Mosaic Co., Inc.	15/57
Worth Lumber Co.	15/61
<i>Worthwood</i>	15/61

Wood—Plywood

See Plywood

Wood—Teakwood

Wood-Mosaic Co., Inc.	15/57
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Flooring—Cont.

Wood—Treated

<i>Awlco-ized</i>	12/4
Processed Lumber Co.	12/4
Specifications	12/4

Wood—Veneered

Wood-Mosaic Co., Inc.	15/57
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Floors

Ballroom—Portable, Lifting, Rotary, etc.

See	23/19
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Floors—Sub

Nailing Concrete

Nailcrete Corp.	3/61
Porete Mfg. Co.	3/62

Wood

See Specific Lumber

Flower

Boxes

See Boxes—Flower

Flue

Cleaners

See Soot—Blowers and Cleaners

Dampers—Fireplace

See Dampers—Fireplace

Wall Outlets

See Ventilators—Wall—Common Brick Size

Flues

Brick

See Chimneys

Fly

Screens

See Screens—Insect

Fog

Eliminators

Wing, L. J., Mfg. Co.	26/67
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Folding

Gates

See Gates—Folding

Partitions

See Partitions—Folding

Stairs

See Stairs—Disappearing

Food Preparation and Service

Equipment

See Furnishings and Equipment—Cafeteria and Restaurant; Kitchen—Equipment; Ranges; Cooking—Utensils; etc.

Foot

Wash

See Lavatories

Footlights

Electric

See Stage—Fittings and Lighting

Form

Ties, Clamps and Spacers

<i>Meyer</i>	3/69
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Forms

Fiber

<i>Beaver</i>	14/16
Certain-teed Products Corp.	14/16
Masonite Corp.	3/45
Tempered Presdwood	3/45
Specifications	3/45

Forms—Cont.

Filler Tile

<i>Natco Vitritile</i>	3/31
National Fireproofing Corp.	3/31
Porete Mfg. Co.	3/62
Republic Fireproofing Co., Inc.	3/71
<i>Slagblok</i>	3/71

Flashing

<i>Asbestile</i>	8/7
Barrett Co.	8/3
Carey, Philip, Co.	8/5
<i>Elastite</i>	8/5
<i>J-M</i>	8/7
Johns-Manville	8/7
Weatherproof Flashing Co.	8/53
<i>Wee-per</i>	8/53
Specifications	8/3; 8/7; 8/53

Metal

American Brake Shoe and Foundry Co.	6/2
<i>Bethlehem</i>	3/50
Concrete Engineering Co., Inc.	3/69
Concrete Steel Co.	3/47
Detroit Steel Products Co.	3/73
<i>Floretyle</i>	11/12
Goldsmith Metal Lath Co.	14/3
<i>Holorib</i>	3/73
Kalman Steel Corp.	3/50
<i>Locktyle</i>	11/12
<i>Meyer Steelforms</i>	3/69
Milcor Steel Co.	3/75
<i>Plastoform</i>	14/3
<i>Shurebond</i>	14/3
Truscon Steel Co.	11/12

Plywood

Douglas Fir Plywood Assn.	3/44; 12/17
<i>Laminex Plyform</i>	12/18
Wheeler Osgood Sales Corp.	12/18

Foundation Construction

Buildings, Chimneys, Tanks, etc.

See Contractors—Piling; Engineers—Concrete Construction; Engineers—General Construction; Engineers—Foundation

Founders

Metal

See Castings; Ornamental—Metal Work

Foundry

Work

See Specific Article

Fountains

Display and Lawn

Gorham Co.	7/17
Kawneer Co.	11/10
See also	3/15

Drinking

Bradley Washfountain Co.	25/25
Century Brass Works, Inc.	25/3
Ebco Mfg. Co.	25/2
Oregon Brass Works.	25/4
Taylor, Halsey W., Co.	25/5
See also	24/15
Specifications	25/5

Drinking—Ice Tank Combination

Century Brass Works, Inc.	25/3
Ebco Mfg. Co.	25/2
Puro Filter Corporation of America.	24/50
Taylor, Halsey W., Co.	25/5

Drinking—Refrigerating Unit Combination

<i>Dulux</i>	25/7
Ebco Mfg. Co.	25/2
Frigidaire Division, General Motors Corp.	22/26
<i>G-E</i>	22/27
General Electric Co.	22/27
<i>Micarta</i>	25/7
Puro Filter Corporation of America.	24/50
Russ Soda Fountain Co.	22/22
Taylor, Halsey W., Co.	25/5
Temprite Products Corp.	25/6
Westinghouse Electric & Mfg. Co.	25/7
See also	22/29

Frames

Door—Buck and Trim Units

Aetna Steel Products Corp.....	10/1
Art Metal Construction Co.....	10/2
Dahlstrom Metallic Door Co.....	10/3
Kalman Steel Corp.....	10/8
Kalmantrim	10/8
Richmond Fireproof Door Co.....	10/16
See also.....	9/7; 10/6; 10/12; 10/18; 14/3; 14/6; 21/4

Door—Formed Steel

See Frames—Door—Buck and Trim Units

Door—Hollow Metal

(See also Doors—Hollow Metal; Trim—Hollow Metal)	
Aetna Steel Products Corp.....	10/1
Art Metal Construction Co.....	10/2
Firecraft Door Co.....	10/5
Jamestown Metal Corp.....	10/7
Mecco	10/10
See also	10/12; 21/4

Door—Metal Covered

(See also Doors—Wood—Metal Frame)	
Aetna Steel Products Corp.....	10/1
Fyrgard	10/16
Mahon, R. C., Co.....	10/9
Overly Mfg. Co.....	10/11
Richmond Fireproof Door Co.....	10/16
See also	10/6; 10/18

Door—Wood

Curtis Companies Service Bureau.....	11/15
Mitertite	11/15
Pine Craft	11/19
White Pine Sash Co.....	11/19
See also.....	11/13; 22/2

Steel

(See also Shapes—Non-structural)	
Stan-Steel Corp.....	5/8

Wall—Ventilator or Grille

Independent Register & Mfg. Co.....	26/54
Vee-U	26/58
Waterloo Register Co.....	26/58
See also	26/49

Window—Metal

Alcoa	11/1
Aluminum Co. of America.....	11/1
Payne-Spiers Studios, Inc.....	17/9
See also	19/5

Window—Steel—Built-in

Biltin	11/9
Hope's Windows Inc.....	11/9
Mesker Bros. Iron Co.....	11/11
Specifications	11/9

Window—Wood

Andersen Frame Corp.....	11/14
Awlco-ized	12/4
Curtis Companies Service Bureau.....	11/15
Dalmo-Pine Craft	11/19
Farley & Loetscher Mfg. Co.....	11/16
Master	11/14
Mitertite	11/15
Pine Craft	11/19
Processed Lumber Co.....	12/4
Silentite	11/15
White Pine Sash Co.....	11/19
See also.....	11/13; 12/15; 21/26; 22/2
Specifications	11/19; 12/4

Window—Wood—Insulated

Huttig Mfg. Co.....	11/17
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Window—X-Ray Protective

See Windows—X-Ray Protective

Wood

Awlco-ized	12/4
Processed Lumber Co.....	12/4
Specifications	12/4

Franklin Stoves

See	26/102
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Freezers

Coolerator Co.....	22/25
Icy-Chef	22/25

Front Work

Brass or Bronze

(See also Ornamental—Metal Work)

Himmel Brothers Co.....	17/17
Penn Brass & Bronze Works.....	7/22
See also	7/14

Cast Iron

Logan Co.	7/18
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Elevator

See Enclosures—Elevator

Refrigerator

See Refrigerator—Front Work

Terra Cotta

See Terra Cotta—Architectural

Fuel Burning

Equipment

See Stokers; Burners—Oil

Furnace

Controls

See Dampers; Controls; Regulators

Furnaces

Gas Fired—Combination Heat and Hot Water

Crane Co.	26/26
G-E	26/9
General Electric Co.....	26/9

Gas Fired—Steam, Vapor or Hot Water

(See also Heaters—Water—Gas Fired—Combination Boiler and Burner)

Burnham Boiler Corp.....	26/24
Crane Co.	26/26
G-E	26/9
Gas-Era	25/14
General Electric Co.....	26/9
Heggie-Simplex	26/30
Kewanee Boiler Corp.....	26/29
Mueller, L. J., Furnace Co.....	26/14
Spencer Heater Co.....	26/34

Oil Fired—Combination Heat and Hot Water

(See also Heaters—Water—Gas Fired—Combination Boiler and Burner)

Arco-Petro	26/31
Crane Co.	26/26
Delco Appliance Corp.....	26/4
Delco-Heat	26/4
Electrol Inc.	26/5
Electrol-Kewanee	26/5
G-E	26/9
General Electric Co.....	26/9
Gilbarco	26/8
Gilbert & Barker Mfg. Co.....	26/8
Hy-Test	26/33
Johnson, S. T., Co.....	26/28
Kelvinator Corp.	26/12
Laddi	26/28
May Oil Burner Corp.....	25/13
Nu-Way Corp.	26/32
Oil-O-Matic	26/36
Petroleum Heat and Power Co.....	26/31
Petro-NoKol	26/31
Quiet May	26/13
Williams Oil-O-Matic Heating Corp.....	26/36
Wood, Gar, Industries, Inc.....	26/20

Oil Fired—Steam, Vapor or Hot Water

(See also Heaters—Water—Gas Fired—Combination Boiler and Burner)

Arco-Petro	26/31
Burnham Boiler Corp.....	26/24
Columbia Radiator Co.....	26/25
Crane Co.	26/26
Delco Appliance Corp.....	26/4
Delco-Heat	26/4
Electrol-American	26/5
Electrol Incorporated	26/5
Electrol-Kewanee	26/5
G-E	26/9
General Electric Co.....	26/9
Gilbarco	26/8

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Furnaces—Cont.

Oil Fired—Steam, Vapor or Hot Water—Cont.

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Gilbert & Barker Mfg. Co.	26/8
Heggie-Simplex	26/30
Johnson, S. T., Co.	26/28
Laddi	26/28
May Oil Burner Corp.	26/13
Oil-O-Matic	26/36
Petroleum Heat and Power Co.	26/31
Petro-NoKol	26/31
Quiet May	26/13
Smith, H. B., Co.	26/33
Spencer Heater Co.	26/34
Tempered-Aire	26/20
Williams Oil-O-Matic Heating Corp.	26/36
Wood, Gar, Industries, Inc.	26/20

Warm Air—Coal—Manually Fired

Holland Furnace Co.	26/10
Mueller, L. J., Furnace Co.	26/14
Vaporaire	26/10

Warm Air—Coal—Stoker Fired

Holland Furnace Co.	26/10
Vaporaire	26/10

Warm Air—Forced Circulation—Coal, Gas and Oil Fired

(See also Heating Systems; Heaters—Unit)

Aire-U-Well	26/10
Delco Appliance Corp.	26/4
Delco-Heat	26/4
Fox Furnace Co., Div. of American Radiator & Standard Sanitary Corp.	26/6
Holland Furnace Co.	26/10
Petro	26/31
Petroleum Heat and Power Co.	26/31
Sunbeam	26/6
Superfex	26/17
Vaporaire	26/10
Wood, Gar, Industries, Inc.	26/20

Warm Air—Forced Circulation Fans and/or Blowers

(See also Fans; Blowers)

Emerson Electric Mfg. Co.	26/63
Perfection Stove Co., Inc.	26/17

Warm Air—Gas Fired

Gas-Era	26/14
Holland Furnace Co.	26/10
Mueller, L. J., Furnace Co.	26/14
Vaporaire	26/10

Warm Air—Oil Fired

(See also Burners—Oil)

Delco Appliance Corp.	26/4
Delco-Heat	26/4
Gilbarco	26/8
Gilbert & Barker Mfg. Co.	26/8
Holland Furnace Co.	26/10
Mueller, L. J., Furnace Co.	26/14
Perfection Stove Co., Inc.	26/17
Petro	26/31
Petroleum Heat and Power Co.	26/31
Vaporaire	26/10
Wood, Gar, Industries, Inc.	26/20

Warm Air—Wood Fired

Holland Furnace Co.	26/10
Mueller, L. J., Furnace Co.	26/14
Vaporaire	26/10

Furnaces and Kilns

Brick

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Furnishings and Equipment

Bank, Office and Library

Art Metal Construction Co.	21/2
GF	21/1
General Fireproofing Co.	21/1
Lyon Metal Products, Inc.	21/12
Snead & Co.	21/5
Watson Mfg. Co., Inc.	19/12
See	20/10; 21/4

Furnishings and Equipment—Cont.

Breakfast Room

White Door Bed Co., Inc.	22/14
Specifications	22/14

Cafeteria and Restaurant

Edison General Electric Appliance Co., Inc.	22/20
G-E	22/20
Kamrass, H., & Son, Inc.	21/27
Maforco	22/23
Market Forge Co.	22/23
Van, John, Range Co.	22/21

Carpets

See Rugs and Carpets

Check Room

See Check Room Equipment

Dumbwaiters

See Dumbwaiters; Lifts; Elevators; Hoists

Ecclesiastical

(See also Ecclesiastical Furniture and Accessories)

McGann, T. F., & Sons Co.	7/20
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Elevators

See Elevators; Lifts; Dumbwaiters; Hoists

Filing and Equipment

See Filing Equipment

Fire-resistive Safes

See Safes

Hospital

Art Metal Construction Co.	23/16
GF	23/17
General Fireproofing Co.	23/17
Kewaunee Mfg. Co.	21/3
Par-Brook Mfg. Co.	21/4
Watson Mfg. Co., Inc.	19/12

Kitchen

See Kitchen—Equipment

Laboratory

GF	23/18
General Fireproofing Co.	23/18
Kewaunee Mfg. Co.	21/3
Virginia Alberene	3/10
Virginia Black Serpentine	3/10

Lifts

See Lifts; Elevators; Dumbwaiters; Hoists

Rugs

See Rugs and Carpets

Theater

Clark, Peter, Inc.	23/19
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Furniture

Cafeteria and Restaurant

See Furnishings and Equipment

Casters and Rests

See Casters and Rests—Furniture

Disappearing or Fold-away

Servettes	21/29
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Ecclesiastical

See Furnishings and Equipment—Ecclesiastical

Garden

Allenstone	8/27
Galloway Terra Cotta Co.	3/18
Gorham Co.	7/17
Hope's Windows Inc.	11/9
See also	12/20; 23/50

Laboratory or Hospital

See Furnishings and Equipment—Hospital; Laboratory

Metal

Berloy	21/9
GF	21/1
General Fireproofing Co.	21/1
Jamestown Metal Corp.	10/7
Lyon Metal Products, Inc.	21/12
Watson Mfg. Co., Inc.	19/12
See also	21/2

Wood

See	20/10
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Fur

Fixtures—Cold Storage

<i>Maforco</i>	22/23
Market Forge Co.	22/23

Furring

Cold Formed Channels

<i>Ceco</i>	3/69
Concrete Engineering Co., Inc.	3/69
Milcor Steel Co.	14/7

Gypsum

See Tile—Hollow—Gypsum

Hollow Tile

See Tile—Hollow Clay

Furring and Studding—Metal

Channel—U-Stud, etc.

<i>Ceco</i>	3/69
Concrete Engineering Co., Inc.	3/69
Concrete Steel Co.	3/47
<i>Gold Bond</i>	14/8
Goldsmith Metal Lath Co.	14/3
<i>J & L</i>	5/6
Jones & Laughlin Steel Corp.	5/6
Kalman Steel Corp.	5/7
<i>Longspan</i>	5/7
<i>MacMar</i>	5/7
Milcor Steel Co.	14/7
National Gypsum Co.	14/8
<i>Penco</i>	14/11
<i>Penmetal</i>	14/11
Penn Metal Co.	14/11
<i>Red Top</i>	14/9
<i>Shurebond</i>	14/3
<i>Simp-L-On</i>	14/12
Simplon Products Corp.	14/12
<i>Steel-H-Studs</i>	14/9
Stran-Steel Corp.	5/8
Truscon Steel Co.	11/12
<i>USG</i>	14/9
United States Gypsum Co.	14/9
Universal Metal Sections Co.	3/76
See also	3/51; 14/2; 14/6
Specifications	14/7; 14/8; 14/9; 14/12

X-Ray Proof

Ray Proof Corp.	13/47
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G

Gable

Ventilators

Aiolite Co.	19/23
American Coolair Corp.	26/60
Century Fan & Engineering Co.	9/13
<i>Coolair</i>	26/60
Riesner, Benjamin	9/22
Sturtevant, B. F., Co.	26/65
See also	9/10

Gages

See Gauges

Garage

Door Hangers

See Hangers—Door

Door Hardware

See Hardware—Garage Door

Door Hinges

See Hinges—Garage Door

Door Operators

See Operators—Door

Garbage

Burners

See Incinerators

Chutes

See Chutes—Garbage or Waste

Receivers

See Receivers—Garbage

Garden

Flagging

See Flagging

Furniture

See Furniture—Garden

Pottery

See Pottery—Garden; Terra Cotta—Architectural

Walk Edging

See Edgings—Garden Walk

Garment

Carrier Equipment

(See also Hangers—Garment)

<i>Garcy</i>	7/15
Garden City Plating & Mfg. Co.	7/15
Knappe & Vogt Mfg. Co.	18/41
<i>K-Veniences</i>	18/41
<i>Riteway</i>	20/16
See also	18/34

Gas

Fired Boilers

See Boilers—Heating—Gas Fired

Machines or Generators

See Generators—Gas

Protective Devices—Gasoline, Bank, Offices, etc.

See Protective Devices—Bank, Office; etc.—Gas

Systems for Cooking, etc.

(See also Gas—Tanked or Bottled; Generators—Gas)

Philgas Dept., Phillips Petroleum Co.	22/47
Pyrofax Div., Carbide and Carbon Chemicals Corp.	22/48
Tirrill Gas Machine Corp.	22/49
Specifications	22/47; 22/48

Tanked or Bottled

(See also Gas—Systems for Cooking, etc.)

Philgas Dept., Phillips Petroleum Co.	22/47
Pyrofax Div., Carbide and Carbon Chemicals Corp.	22/48
Specifications	22/47; 22/48

Gates

Baffle—Railroad Station, etc.

Bright, H. V., Turn Stile Co.	23/23
Perey Turnstile Co.	23/24
<i>Roto-Gate</i>	23/24

Diverting—Sewage Disposal—Tile

Aten Sewage Disposal Co., Inc.	24/18
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Elevator—Automatic and Semi-automatic

See	30/2; 30/6
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Elevator—Folding

See Gates—Folding

Elevator—Sliding—Freight Car—Vertical Sliding

Peelle Co.	10/15
St. Louis Fire Door Co.	10/18
See also	30/12
Specifications	10/15

Folding—Lazy Tong and Bostwick

Acorn Wire and Iron Works.	6/26
<i>ES</i>	30/13
Logan Co.	7/18
<i>Pitt-Bostwick</i>	6/30
Pitt, William R., Composite Iron Works.	6/30
See also	7/22; 10/5; 23/46; 23/50; 30/6

Iron—Electrically Welded

Anchor Post Fence Co.	23/45
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Iron and Wire

<i>Afco</i>	23/44
American Chain Link Fence Co.	23/43
American Fence Construction Co.	23/44
Anchor Post Fence Co.	23/45
<i>Anchor-Weld</i>	23/45
<i>Bulwark</i>	23/44
Cincinnati Iron Fence Co., Inc.	23/46
Continental Steel Corp.	23/47
Cyclone Fence Co.	23/48
<i>Invincible</i>	23/48

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Iron and Wire—Cont.

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Logan Co.	7/18
Page Fence Assn.	23/49
Stewart Iron Works Co., Inc.	23/50
Wickwire Spencer Steel Co.	23/51
See also	10/5; 23/26
Specifications	23/44

Iron or Bronze—Plain or Ornamental

Afco	23/44
American Fence Construction Co.	23/44
Cincinnati Iron Fence Co., Inc.	23/46
Cyclone Fence Co.	23/48
General Bronze Corp.	7/16
Kawneer Co.	11/10
Logan Co.	7/18
McGann, T. F., & Sons Co.	7/20
Metalcrafts	7/21
Page Fence Assn.	23/49
Roanoke Iron & Bridge Works, Inc.	23/13
Stewart Iron Works Co., Inc.	23/50
See also	7/14; 7/22; 7/26; 23/45; 23/51

Mechanically Operated

(See also Doors—Mechanically Operated)

Aut-O-Dor	18/22
Peelle Co.	10/15
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
St. Louis Fire Door Co.	10/18
Specifications	10/15

Operators for

See Operators—Door—Sliding, Swinging, Folding, Rolling, etc.

Rolling or Coiling

See Grilles and Guards—Rolling or Coiling

Sidewalk Door—Spring Guard

See Doors—Sidewalk—Metal or Vault Light—Safety Guarded—Automatically Opened and Closed

Turnstiles

See Turnstiles

Wire Mesh

See Gates—Iron and Wire

Wood

(See also Fences)

Hitchcock	23/42
Rusticraft Fence Co.	23/42
Wont Sag	23/42

Gauges

Pressure, Temperature and/or Vacuum

Brown	26/81
Everson Filter Co.	23/30
Minneapolis-Honeywell Regulator Co.	26/81
Sarco Co., Inc.	26/90
Sterling Engineering Co.	26/92
Thrush, H. A., & Co.	26/83

Water Level

See 26/92

Generating Sets

Motor

G-E	27/13
General Electric Co.	27/13
See also	30/11

Steam Turbine and Engine

G-E	27/13
General Electric Co.	27/13

Generators

Electric—A-c. and D-c.

G-E	27/13
General Electric Co.	27/13
See also	27/5

Gas—Gasoline

(See also Gas—Systems for Cooking, etc.)

Tirrill Gas Machine Corp.	22/49
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Generators—Cont.

Hot Water

See Heaters—Water

Steam

See Boilers

Girders

Steel Plate

Bethlehem Steel Co.	5/2
Truscon Steel Co.	11/12

Glass

Architectural

See Glass—Moulded or Cast

Art

See Glass—Tinted, Colored or Stained—Cathedral

Bullet Resisting

See Glass—Safety

Carved, Etched, Ground, Embossed, etc.

See 17/2

Cast

See Glass—Moulded or Cast

Clear, Shut, Drawn or Plate

Aklo	17/4
American Window Glass Co.	17/2
Blue Glass	17/1
Clearlite	17/3
Crystalex	17/1
Flesh Tinted	17/1
Fourco Glass Co.	17/3
L-O-F	17/4
Libbey-Owens-Ford Glass Co.	17/4
Lustraglass	17/2
Lustrawhite	17/2
Macbeth-Evans Glass Co.	28/8
Monax	28/8
Pennvernion	17/1
Pittsburgh Plate Glass Co.	17/1
Tuf-Flex	17/4
Vista	17/1
See also	11/13; 17/5
Specifications	17/1; 17/4

Concrete Construction

See Lights—Vault and Sidewalk; Skylights—Glass and Concrete Construction

Corrugated

CWG	9/5
Pennsylvania Wire Glass Co.	9/5
Specifications	9/5

Diffusing

See Glass—Obscuring and Diffusing

Enclosures—Roof, Swimming Pool, etc.

See Greenhouses and Conservatories; Enclosures—Glass

Figured

See Glass—Obscuring and Diffusing

Heat Intercepting or Resisting

Coolite	17/6
Corning Glass Works	3/28; 17/10
K.G.I.	28/7
Kopp Glass, Inc.	28/7
Mississippi Glass Co.	17/6
Nicco	28/7
Pennsylvania Wire Glass Co.	17/5
Pittsburgh Plate Glass Co.	17/1
Pyrex	3/28; 17/10
Solex	17/1
Specifications	17/1

Leaded

Payne-Spiers Studios, Inc.	17/9
Specifications	17/9

Lens

See 17/2

Masonry

See Brick—Glass; Tile—Hollow—Glass

Mirrors

See Mirrors—Glass

Glass—Cont.

Mosaics

Payne-Spiers Studios, Inc. 17/9

Moulded—Cast or Pressed

Alvax 28/8
 Corning Glass Works 17/10
Corning-Steuben 17/10
Lumite 28/8
 Macbeth-Evans Glass Co. 28/8
Steuben 17/10

Non-Obscuring—Sheet or Drawn

See Glass—Clear—Sheet, Drawn or Plate; Glass—Polished Plate

Obscuring and Diffusing

Alba 28/8
 American 3 Way-Luxfer Prism Co. 9/23; 17/8
Apex 17/6
Artex 17/6
Aurora 17/6
 Blue Ridge Glass Corp. 17/4
Devilite 17/6
Diffuser 17/4
Factrolite 17/6
Florentine 17/6
Florex 17/4
Hylite 17/6
Imperial 17/7
Industrex 17/4
Insulux 3/29
L-O-F 17/4
 Libbey-Owens-Ford Glass Co. 17/4
Luminex 17/4
Luxlite 17/6
 Macbeth-Evans Glass Co. 28/8
Magnalite 9/23; 9/26; 17/8
Magnalite A. 17/6
Magnalite B. 17/6
Maze 17/6
Mazex 17/4
 Mississippi Glass Co. 17/6
Monax 28/8
Muralex 17/4
 Owens-Illinois Glass Co. 3/29
Pebblex 17/4
Pentecor 17/6
 Pittsburgh Plate Glass Co. 17/1
 Pressed Prism Plate Glass Co. 17/7
Prestlite 17/6
Reglex 17/4
 Richards, J. Merrill. 9/26; 17/8
Rubanite 17/7
Satinol 17/4
Silverlite 17/6
Skytex 17/4
Syenite 17/6
Tapestry 17/1
Texture 17/7
3 Way-Luxfer 9/23
Transex 17/4
Translite 17/6
Velvex 17/4
 See also 17/5
 Specifications 9/26; 17/1; 17/4; 17/8

Obscuring and Diffusing Tile

(See also Brick—Glass)

American 3 Way-Luxfer Prism Co. 9/23
3 Way 9/23
3 Way-Luxfer 9/23

Picture

See Glass—Clear Sheet or Drawn

Plate—Ornamental

American Window Glass Co. 17/2
 Blue Ridge Glass Corp. 17/4
Diffuser 17/4
Imperial 17/7
Industrex 17/4
Muralex 17/4
Pebblex 17/4
 Pittsburgh Plate Glass Co. 17/1
 Pressed Prism Plate Glass Co. 17/7
Reglex 17/4

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Glass—Cont.

Plate—Ornamental—Cont.

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Rubanite 17/7
Tapestry 17/1
Texture 17/7
 Specifications 17/1; 17/4

Polished Plate

Blue 17/1
Crystalex 17/1
Flesh-Tinted 17/1
Herculite 17/1
L-O-F 17/4
 Libbey-Owens-Ford Glass Co. 17/4
 Pittsburgh Plate Glass Co. 17/1
Solex 17/1
Vista 17/1
Water White 17/1
 Specifications 17/1; 17/4

Pressed

See Glass—Moulded—Cast or Pressed

Prism

See Glass—Obscuring and Diffusing

Safety

Aerolite 17/1
 American Window Glass Co. 17/2
Armor-Lite 17/2
Duolite 17/1
Duplate 17/1
L-O-F 17/4
 Libbey-Owens-Ford Glass Co. 17/4
Multiplate 17/1
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Shatterproof

See Glass—Safety

Shower Doors

See Doors—Shower Stall—Glass

Skylight

See Specific Type of Glass

Stained Windows

See Windows—Art Glass

Structural

Carrara 17/1
 Corning Glass Works 3/28; 17/10
Corning-Steuben 17/10
Insulux 3/29
L-O-F 17/4
 Mississippi Glass Co. 17/6
Nuralite 15/14
Nuraplate 15/14
 Nurre Cos., Inc. 15/14
 Owens-Illinois Glass Co. 3/29
 Pittsburgh Plate Glass Co. 17/1
Pyrex 3/28
 Vitrolite Div., Libbey-Owens-Ford Glass Co. 17/4
White, Black and 7 Colors 17/1
 Specifications 17/1

Tile or Slabs

See Specific Type of Glass

Ultra-Violet Ray—Non-intercepting

American Window Glass Co. 17/2
Lustraglass 17/2

Vault—Sidewalk and Skylight Tile

American 3-Way Luxfer Prism Co. 9/23
 Grauer, Albert, & Co. 9/24
Magnalite 9/26
New Unity 9/26
 Richards, J. Merrill. 9/26
 Richards & Kelly Mfg. Co. 9/25
3 Way 9/23
 See also 6/1
 Specifications 9/23; 9/24

Window and Door

See Specific Types of Glass

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(Including: Plain, Hammered, Rough, Ribbed and Figured)

American 3 Way-Luxfer Prism Co. 9/23; 17/8
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Wire—Cont.

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Blue Ridge Glass Corp.	17/4
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Diffuser	17/4
Factrolite	17/6
Florex	17/4
Hylite	17/6
Industrex	17/4
Luminex	17/4
Luxlite	17/6
Magnalite	17/8
Magnalite A	17/6
Magnalite B	17/6
Maze	17/6
Mazex	17/4
Misco	17/6
Mississippi Glass Co.	17/6
Muralux	17/4
Pebblex	17/4
Pennsylvania Wire Glass Co.	9/5; 17/5
Pentecor	17/6
Richards, J. Merrill	17/8
Satinol	17/4
Silverlite	17/6
Skytex	17/4
Syenite	17/6
3 Way-Luxfer	9/23
Transex	17/4
Velux	17/4
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P.P.G.Co.	17/1
Pittsburgh Plate Glass Co.	17/1
Ray Proof Corp.	13/47

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See	23/30
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Alabaster	28/10
Alba	28/8
Alvar	28/8
Celestialite	28/3; 28/4
Corning Glass Works	17/10
Corning-Steuben	17/10
Frostell	28/10
Galax	28/8
Gleason-Tiebout Glass Co.	28/3; 28/4
Graybar Electric Co., Inc.	28/5
K.G.I.	28/7
Kopp Glass, Inc.	28/7
Lumite	28/8
Lunaire	28/9
Lunalux	28/9
Macbeth-Evans Glass Co.	28/8
Magnalaire	28/9
Magnalite	28/9
Magnalux	28/9
Monax	28/8
Phoenix Glass Co.	28/10
Polycase	28/3
Radiant	28/10
Silvaglo	28/3
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Sollaire	28/9
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Westinghouse Electric & Mfg. Co.	28/9

Glaze for

Paint

See Paint—Glaze

Glazed

Brick

See Brick—Enameled

Glazing

Compounds

See Caulking and Glazing—Compounds

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See Skylights; Greenhouses and Conservatories; Store Front—Construction Metal

Gongs

Electric

See Bells and Buzzers—Electric

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Folding—Indoor

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Wayne Iron Works	23/26

Outdoor—Portable and/or Permanent

See	23/26
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Granite

Crushed

Sullivan Granite Co.	3/9
See also	3/7

Paving Blocks

See	3/7
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Fletcher, H. E., Co.	3/4
Hitchcock Supreme	3/8
National Building Granite Quarries Assn., Inc.	3/6
Quincy Quarries Co.	3/8

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Cold Spring Granite Co., Inc.	3/3
Fletcher, H. E., Co.	3/4
Goss, John L., Corp.	3/5
Hitchcock Supreme	3/8
National Building Granite Quarries Assn., Inc.	3/6
North Carolina Granite Corp.	3/7
Quincy Quarries Co.	3/8
Sullivan Granite Co.	3/9
Sullivan-Westerly	3/9
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Asphalt

See Roofing—Granules for Asphalt

Grates

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Donley Brothers Co.	26/104
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Colonial Fireplace Co.	26/101
Glo-Hot	26/101
Solar Glow	24/47
Westinghouse Electric & Mfg. Co.	24/47
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Dean	22/46
Donley Brothers Co.	26/104
Washburn & Granger, Inc.	22/46
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American Abrasive Metals Co.	6/15
American Brake Shoe and Foundry Co.	6/2
Armoring	6/18
Blaw-Knox Co.	6/17
Continuity	6/18
Electroforged	6/17
Hendrick Mfg. Co.	6/16
Irvico	6/18
Irving Iron Works Co.	6/18
Kerlow Steel Flooring Co.	6/19
Logan Co.	7/18
Mitco	6/16
Reliance	6/15
Reticuline	6/18
Safkar	6/18

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<i>Saftred</i>	6/18
<i>Streamline</i>	6/18
<i>Sublit</i>	6/18
<i>Subway</i>	6/18
<i>Sunway</i>	6/18
<i>Unified</i>	6/18
<i>Vizabledg</i>	6/18
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Drops

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<i>Air-Way</i>	24/21
Boosey, Norman, Mfg. Co.	24/21
Compound Injector & Specialty Co.	24/23
<i>Dehn's</i>	24/23
<i>GeM</i>	24/23
<i>Greaseptor</i>	24/29
Josam Mfg. Co.	24/27
<i>Josam-Marsh</i>	24/27
Wade Mfg. Co.	24/28
Zurn, J. A., Mfg. Co.	24/29
See also	24/19

Greasing

Pits

See Pits—Greasing

Greenhouse

Ventilating Devices

See Sash—Operating Devices

Greenhouses and Conservatories

American-Moninger Greenhouse Mfg. Corp.	23/35
Hitchings & Co.	23/36
<i>Improved Master V-Bar</i>	23/37
<i>L & B</i>	23/37
Lord and Burnham Co.	23/37
Lutton, Wm. H., Co., Inc.	23/38
<i>Solar V-Bar</i>	23/38
<i>Super-Frame</i>	23/36
<i>U-Bar</i>	23/36
See also	18/39
Specifications	23/35

Greenstone

Natural

Virginia Greenstone Co., Inc.	3/11
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Grids

Flooring—for Armoring Concrete and Asphalt Floors

Acme Steel Co.	6/20
<i>Armor Grids</i>	6/21
<i>Armorgrids</i>	6/16
<i>Boldej</i>	6/19
<i>Continuity</i>	6/18
<i>Dean</i>	22/46
<i>Floorsteel</i>	6/20
Hendrick Mfg. Co.	6/16
<i>I-Beam-Lok</i>	2/1
Irving Iron Works Co.	6/18
Kerlow Steel Flooring Co.	6/19
<i>Mitco</i>	6/16
<i>Rapid Transit</i>	6/19
<i>Reliance</i>	6/15
<i>Snead & Co.</i>	6/21
<i>Steelej</i>	6/19
<i>T-Tri-Lok</i>	2/1
Washburn & Granger, Inc.	22/46
Specifications	6/21

Flooring—Electrical Grounding

Manhattan Terrazzo Brass Strip Co., Inc.	15/11
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Grilles

Cast

See Castings; Ornamental—Metal Work

Controlled—Manual or Automatic

See Dampers and/or Registers; Louvers

Door and Window—Rolling or Coiling

See Gates and Grilles—Rolling or Coiling

Hand Wrought Iron

See Ornamental—Metal Work; Castings

Radiator

See Grilles and Screens; Radiator—Covers and Cabinets

Grilles and Guards

Bank

Art Metal Construction Co.	21/2
<i>GF</i>	21/1
Hendrick Mfg. Co.	26/52
Kentucky Metal Products Co., Inc.	6/29
<i>Kmpc</i>	6/29
Logan Co.	7/18
Penn Brass & Bronze Works.	7/22
See also	7/13; 7/14; 7/16; 7/20; 21/1

Cast

See Castings; Ornamental Metal Work

Door, Floor and Window

Acorn Wire and Iron Works.	6/26
<i>Afco</i>	23/44
American Foundry & Furnace Co.	26/45
Chamberlin Metal Weather Strip Co., Inc.	19/2
Cincinnati Iron Fence Co., Inc.	23/46
Consolidated Expanded Metal Cos.	6/27
Cyclone Fence Co.	23/48
Everhard Mfg. Co.	19/5
Kawneer Co.	11/10
Kentucky Metal Products Co., Inc.	6/29
McGann, T. F., & Sons Co.	7/20
<i>Kmpc</i>	6/29
Logan Co.	7/18
Pitt, William R., Composite Iron Works.	6/30
<i>Pitt-Bostwick</i>	6/30
<i>Red Top</i>	3/52
Roanoke Iron & Bridge Works, Inc.	23/13
<i>Safe-T-Mesh</i>	6/27
<i>Sealair</i>	11/10
Southern Prison Co.	23/14
<i>Steelcrete</i>	6/27
See also	7/22; 8/45; 19/4; 23/7; 23/14; 23/15; 23/44; 23/50

Rolling or Coiling

Cornell Iron Works, Inc.	6/28; 10/20
Kinnear Mfg. Co.	10/22
Specifications	10/22

Grilles and Screens

Heating, Ventilating or Air Conditioning—Cast, Stamped or Perforated Metal

American Foundry & Furnace Co.	26/45
American Warming & Ventilating Co.	26/46
Auer Register Co.	26/47
Best Register Co.	26/49
<i>Bohnalite</i>	7/6
<i>Bohnolloy</i>	7/6
Carrier Engineering Corp.	26/3
<i>Clinton</i>	26/59
<i>Croscane</i>	26/59
Diamond Mfg. Co.	26/50
<i>Fabrikated</i>	26/54
Ferro-Co Corp.	26/72
<i>Ferrocrafft</i>	26/55
<i>H&C</i>	26/53
Harrington & King Perforating Co.	26/51
Hart & Cooley Mfg. Co.	26/53
Heatilator Co.	26/105
Hendrick Mfg. Co.	26/52
<i>Hiltoncast</i>	26/55
Independent Register & Mfg. Co.	26/54
Kawneer Co.	17/18
Kentucky Metal Products Co., Inc.	6/29
<i>Kmpc</i>	6/29
<i>Mitco</i>	6/16
Mueller, L. J., Furnace Co.	26/14

(Continued on Next Page)

Grilles and Screens—Cont.

Heating, Ventilating or Air Conditioning—Cast, Stamped or Perforated Metal—Cont.

(Continued from Previous Page)

<i>Quadri-Flo</i>	26/58
Quaker City Metal Products Corp.	26/73
<i>Silentflo</i>	26/16
Sturtevant, B. F., Co.	26/16
Superior Fireplace Co.	26/108
<i>Tri-Flo</i>	26/58
Tuttle & Bailey, Inc.	26/55
Waterloo Register Co.	26/58
Wickwire Spencer Steel Co.	26/59
<i>Wiscane</i>	26/59
<i>Wissco</i>	26/59
See also	7/6; 7/14; 19/5; 23/50; 26/56
Specifications	26/59

Grounds

Base—Metal

<i>Ceco</i>	3/69
Concrete Steel Co.	3/47
<i>J & L</i>	5/6
Jones & Laughlin Steel Corp.	5/6
Knapp Bros. Mfg. Co.	14/6
Milcor Steel Co.	14/7
<i>Old Style</i>	14/7
<i>Penco</i>	14/11
<i>Penmetal</i>	14/11
Penn Metal Co.	14/11
<i>Red Top</i>	14/9
Richsto Metal Trim Co., Div. of Milcor Steel Co.	14/7
Truscon Steel Co.	11/12
United States Gypsum Co.	14/9
See also	3/51; 3/69; 14/2; 14/3; 14/13
Specifications	14/9

Guards

Column

See	6/2
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Door and Window

See Grilles and Guards

Door and Window—Rolling or Coiling

See Grilles—Rolling or Coiling

Doorway—Iron—Concrete Armored

See	6/2
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Highway

See	23/45
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Lamp

See	28/19
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Machinery

Acorn Wire and Iron Works.	6/26
<i>Kmpc</i>	6/29
See also	21/4; 26/45

Radiator

<i>Kmpc</i>	6/29
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Screen Door

See Screens—Insect

Skylight

(See also Guards—Door and Window)

Acorn Wire and Iron Works.	6/26
<i>Kmpc</i>	6/29
See also	23/48

Snow

Campbell, A. W.	8/28
Cartier, M. N., & Sons Co.	8/29
<i>Clason</i>	8/29
<i>Clason Special</i>	8/29
<i>Fitrite</i>	8/30
Levow, David	8/30
<i>Protector</i>	8/30
See also	8/45
Specifications	8/28; 8/29; 8/30

Tree, Lawn and Flower Bed

See Fencing—Wire or Woven Wire; Wire—Work

Wheel

Donley Brothers Co.	26/104
See also	6/1; 6/2

Window—Jail

See Jail—Construction and Equipment

Guide Rail Lubricators

Elevator

<i>ES</i>	30/13
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Gum

Lumber

See Lumber—Gum

Guns

Caulking

Calbar Paint & Varnish Co.	4/8
<i>Caulk-O-Seal</i>	4/8
Pecora Paint Co., Inc.	3/42

Gutters

Drain

See Drains—Roof

Hangers for

See Hangers—Gutter

Roof

Chase Brass & Copper Co., Inc.	8/45
<i>Cop-R-Loy</i>	14/13
<i>E-Z Fit</i>	8/43
<i>Gohi</i>	8/47
<i>Improved</i>	8/65
Long Fir Gutter Co.	8/65
Lyon, Conklin & Co., Inc.	8/46
<i>Lyonore Metal</i>	8/46
Newport Rolling Mill Co., Inc.	8/47
<i>O.G.</i>	8/47
<i>Quaker City</i>	8/43
Republic Steel Corp.	7/10
Revere Copper and Brass Inc.	8/48
<i>Shadowline</i>	8/65
<i>Toncan</i>	7/10
Wheeling Corrugating Co.	14/13
See also	10/11

Gymnasium

Apparatus

Medart, Fred, Mfg. Co.	23/25
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Folding Grandstand

<i>Gymstand</i>	23/26
Wayne Iron Works.	23/26

Seating—Folding—Portable and/or Permanent

<i>Gymstand</i>	23/26
Wayne Iron Works.	23/26

Wardrobes

See Lockers

Gypsum

Floors

See Floor Construction—Gypsum

Lath

See Plaster—Board—Gypsum

Pre-cast Roofs

See Tile—Roofing—Gypsum

Roof Tile

See Tile—Roofing—Gypsum

Roofs

See Roof Construction—Gypsum

Wall Board

See Wall—Board—Gypsum

H

Hair

Felt

See Insulation—Blanket or Bat Form

Halyard

Tops

See Flag Poles—Fixtures for

Hampers

Clothes

See	26/64
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Handles

Door

See Hardware—Finish—Door

Hangars

Door Hardware

See Hardware—Airplane and Dirigible Hangar Door

Hangers

Bar—Concrete Reinforcement

<i>Bar-Tys</i>	3/47
<i>Bethlehem</i>	3/50
<i>Ceco</i>	3/69
Concrete Engineering Co., Inc.	3/69
Concrete Steel Co.	3/47
Donley Brothers Co.	26/104
<i>Hy-Chairs</i>	3/47
<i>J & L</i>	5/6
Jones & Laughlin Steel Corp.	5/6
Kalman Steel Corp.	3/50
Ryerson, Joseph T., & Son, Inc.	3/51
<i>Securo</i>	3/47
<i>Ty-Chairs</i>	3/47

Beam, Joist, Wall, etc.

Duplex Hanger Co.	6/24
Ideal Hanger Co.	6/25
Jones & Laughlin Steel Corp.	5/6
<i>R & L</i>	6/24

Door

(See also Hardware)

<i>Atlas</i>	30/16
Coburn Trolley Track Co.	18/14
<i>ES</i>	30/13
Elevator Supplies Co., Inc.	30/13
<i>Garcy</i>	7/15
<i>Gem</i>	30/14
Grant Elevator Equipment Corp.	30/14
Louden Machinery Co.	23/39
Otis Elevator Co.	30/8
<i>R-W</i>	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22; 30/15
<i>Rich-Wil</i>	30/15
Wagner Mfg. Co.	30/16
See also	7/15; 23/39; 24/32

Furring—Suspended Ceiling

See Clips—Metal Lath—Ceiling, Stucco Reinforcement

Garment

(See also Garment—Carrier Equipment; Closet—Racks and Equipment)

Knappe & Vogt Mfg. Co.	18/41
<i>K-Veniences</i>	18/41
<i>Peterson</i>	23/53
Vogel Peterson Co., Inc.	23/53

Gutter

<i>B.B.</i>	8/43
Berger Brothers Co.	8/43
<i>Gem</i>	8/43
<i>Penn</i>	8/43
<i>Rival</i>	8/43
See also	8/45

Luminaire

<i>Lunaire</i>	28/9
<i>Lunalux</i>	28/9
<i>Lunalux, Jr.</i>	28/9
<i>Magnalux</i>	28/9
<i>Magnalaire</i>	28/9
<i>Magnalite</i>	28/9
<i>Silvurn</i>	28/9
<i>Sollaire</i>	28/9
<i>Sollux</i>	28/9
<i>Sollite</i>	28/9
Westinghouse Electric & Mfg. Co.	28/9

Pipe

Grinnell Co., Inc.	26/93
Porter, H. W., & Co., Inc.	26/96
Ric-wil Co.	26/97
<i>U.F.S.</i>	26/93
See also	26/74

Hangers—Cont.

Pipe Coil

<i>Maforco</i>	22/23
Market Forge Co.	22/23

Radiator

<i>E-Z</i>	26/75
Healy-Ruff Co.	26/75
See also	26/72
Specifications	26/75

Hardboard

Fiber

See Wall—Board—Fiber

Hardeners and Densifiers

Cement and Concrete

<i>Adaflint</i>	4/1
Adensite Co., Inc.	4/1
<i>Agatex</i>	4/21
American Crayon Co.	16/1
Anti-Hydro Waterproofing Co.	4/2
Aquabar Waterproofing Products, Inc.	4/3
<i>Aquatite</i>	4/3
<i>Armortop</i>	4/2
<i>Art-Roc</i>	4/21
<i>B.C.C.</i>	4/6
Building Chemicals Corp.	4/6
Certain-teed Products Corp.	16/10
Colored Master Mix	4/13
Colored Metalicron	4/13
<i>Colormix</i>	4/13
<i>Colorundum</i>	4/9
<i>Cretemix "A"</i>	4/22
<i>Dehydratine No. 80</i>	4/9
<i>Durocon</i>	4/3
<i>Duro-Mix</i>	4/3
<i>Dust-X</i>	14/20
<i>Dycrome</i>	4/13
<i>Ferricon</i>	4/21
<i>Ferro-Fax</i>	4/9
<i>Filtite</i>	16/1
<i>Flintox</i>	4/20
<i>Floorlex</i>	4/3
<i>Glazecoat</i>	4/13
<i>Hard-n-tyte</i>	4/6
Hillyard Chemical Co.	16/2
Horn, A. C., Co.	4/9
Hornstone Crystals	4/9
<i>Hurundum</i>	4/21
<i>Iron Clad Crystals No. 7B</i>	4/3
<i>Ironco</i>	4/3
<i>Kemi-Kote</i>	4/22
<i>Lapidolith</i>	16/4
<i>Lithochrome</i>	9/23
Loomis, W. H., Talc Corp.	4/11
<i>Loomite</i>	4/11
Master Builders Co.	4/13
<i>Master Mix</i>	4/13
Maximent Co.	15/9
<i>Merco</i>	16/21
<i>Metalicron</i>	4/13
Nevins, Oscar W., Co., Inc.	4/14
<i>Old Faithful</i>	16/1
<i>Omicron</i>	4/13
<i>Penetrem</i>	4/22
<i>Pozzolith</i>	4/13
<i>R.I.W.</i>	4/20
Reardon Co.	16/28a
<i>Saniseal</i>	4/13
Sherwin-Williams Co.	16/29
Solvay Sales Corp.	4/17
Sonneborn, L., Sons, Inc.	16/4
Standard Waterproofing Corp.	4/19
<i>Stanwaco</i>	4/19
<i>Super-Colorseal</i>	4/13
<i>Sureseal</i>	4/14
Toch Brothers Inc.	4/20
<i>Tox-Mix</i>	4/20
Tremco Mfg. Co.	4/22
<i>Trimix</i>	16/4
Truscon Laboratories	4/21
<i>Venostone</i>	16/28a
See also	8/2
Specifications	4/1; 4/2; 4/3; 4/13; 4/21; 16/4; 16/28a; 16/29

Hardware

(See also *Specific Product*)

Adjusters—Screen and Storm Sash

Casement Hardware Co.	18/33
Getty, H. S., & Co., Inc.	18/35
Mesker Bros. Iron Co.	11/11
Normandy	11/19
White Pine Sash Co.	11/19
Win-Dor	18/33

Airplane and Dirigle Hangar Door

(See also *Doors—Airplane Hangar*)

R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22

Astragal

Von Duprin	18/42
Vonnegut Hardware Co.	18/42

Awning

Astrup Co.	19/42
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Baffle Gate

Bright, H. V., Turn Stile Co.	23/23
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Bar

Garcy	7/15
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Bolts—Cremone

Getty, H. S., & Co., Inc.	18/35
See also	18/25

Builders

See *Hardware—Finish—Door*; also *Specific Item*

Butts

See *Hinges*

Canopy

Astrup Co.	19/42
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Casement Window—Adjusters

Artex	11/12
Auto-Lock	11/12
Casement Hardware Co.	18/33
Ceco	3/69
Getty, H. S., & Co., Inc.	18/35
Grant Pulley and Hardware Co.	18/34
Hope's Windows Inc.	11/9
Kawneer Co.	11/10
Mesker Bros. Iron Co.	11/11
Normandy	11/19
Queen	18/34
Rixson, Oscar C., Co.	18/29
Sealair	11/10
Thru-Screen	18/33
Truscon Steel Co.	11/12
White Pine Sash Co.	11/19
Win-Dor	18/33
Windsor-Universal	11/11
Zimmerman, G. F. S., Co., Inc.	18/37
Specifications	18/33; 18/35

Casement Window—Cleaning Hinge

Casement Hardware Co.	18/33
Win-Dor	18/33

Casement Window—Fasteners and Bolts

Casement Hardware Co.	18/33
Getty, H. S., & Co., Inc.	18/35
Hope's Windows Inc.	11/9
Mesker Bros. Iron Co.	11/11
Truscon Steel Co.	11/12
Win-Dor	18/33
Zimmerman, G. F. S., Co., Inc.	18/37
See also	18/25
Specifications	18/35

Casement Window—Sash Lifting Butts

Grant Pulley and Hardware Co.	18/34
Queen	18/34

Casement Window—Sash Lifting Pivots

Grant Pulley and Hardware Co.	18/34
Queen	18/34

Casement Window—Stays

Casement Hardware Co.	18/33
Kawneer Co.	11/10
Rixson, Oscar C., Co.	18/29
Sealair	11/10
Win-Dor	18/33

Cold Storage Door

See *Doors—Cold Storage or Refrigerator*

Hardware—Cont.

Colored

Lockwood Hardware Mfg. Co.	18/25
Patrician	18/25

Combination—Metal and Plastic

Lockwood Hardware Mfg. Co.	18/25
Patrician	18/25

Door—Holders

Getty, H. S., & Co., Inc.	18/35
Rixson, Oscar C., Co.	18/29
Von Duprin	18/42
Vonnegut Hardware Co.	18/42
See also	10/1

Finish—Door

Bommer Spring Hinge Co.	18/26
Chicago Spring Hinge Co.	18/27
Getty, H. S., & Co., Inc.	18/35
Lawson Milwaukee	18/28; 20/16
Lockwood Hardware Mfg. Co.	18/25
Metalunit	20/18
Mills Co.	20/7
Milwaukee Stamping Co.	18/28
Nu-Jamb	18/28
Patrician	18/25
Sanymetal Products Co., Inc.	20/17
Von Duprin	18/42
Vonnegut Hardware Co.	18/42
Weis, Henry, Mfg. Co., Inc.	20/18
WeiSteel	20/18
See also	25/41
Specifications	20/18

Fire Door and Shutter

R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22

Folding Door or Partition

See *Hangers—Door—Sliding Folding Partition*

Garage Door

Barber-Colman Co.	18/15
Barcol OVERdoor	18/15
Coburn Trolley Track Co.	18/14
Kinnear Mfg. Co.	10/22
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Slidaside	18/22
Slidetite	18/22
Stanley Works	18/24
Swing-up	18/24
Tip-Top	10/22
See also	18/16
Specifications	10/22; 18/22

Hinges

See *Hinges*

Lavatory and Toilet Door

American Steel Furniture Co.	20/12
Bommer Spring Hinge Co.	18/26
Chicago Spring Hinge Co.	18/27
Fiat Metal Mfg. Co.	20/15
Flush-Metal Partition Corp.	20/14
Lawson Milwaukee	20/16
Lawson Universal	18/28
Metalunit	20/18
Mills Co.	20/7
Milwaukee Stamping Co.	18/28
Sagless	18/27
Sanymetal Products Co., Inc.	20/17
Triplex	18/27
Weis, Henry, Mfg. Co., Inc.	20/18
WeiSteel	20/18
See also	23/11
Specifications	18/28; 20/15; 20/17; 20/18

Revolving Door

See *Doors—Revolving*

Sash Chain or Cord

See *Chain—Sash*; *Cord—Sash*

Sash Operators

See *Sash—Operating Devices*

Sash Pulleys

See *Pulleys—Sash*

Hardware—Cont.

Screen—Door and Window

(See also Screens—Insect)

Burrowes Corp.	19/1
Getty, H. S., & Co., Inc.	18/35
Mesker Bros. Iron Co.	11/11
Truscon Steel Co.	11/12
Watson Mfg. Co., Inc.	19/12
Windsor-Universal	11/11

Shelving—Adjustable

Garco	7/15
Garden City Plating & Mfg. Co.	7/15
Knap & Vogt Mfg. Co.	18/41
K-Veniences	18/41
Lyon Metal Products, Inc.	21/12

Show Case or Counter

See Cases—Display; Cases—Museum or Treasure Room

Sliding Door

See Hangers—Door—Straight Sliding

Tent

Astrup Co.	19/42
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Theater

Clark, Peter, Inc.	23/19
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Transom

Getty, H. S., & Co., Inc.	18/35
Rixson, Oscar C., Co.	18/29
Zimmerman, G. F. S., Co., Inc.	18/37
See also	23/37

Window

Austral Sales Corp.	18/32
Bayley, William, Co.	11/2
Caldwell Mfg. Co.	18/3
Grant Pulley and Hardware Co.	18/34
Mesker Bros. Iron Co.	11/11
New York Universal Window Co., Inc.	18/31a
Normandy	11/19
Pullman Mfg. Corp.	18/4
Tabor	18/34
Truscon Steel Co.	11/12
Universal	18/31a
White Pine Sash Co.	11/19
Williams Pivot Sash Co.	18/36
See also	11/3; 18/25; 18/35; 25/41
Specifications	18/32; 18/36

Window Fixtures—Balanced

See Windows—Reversible

Window Fixtures—Reversible

See Windows—Reversible

Window—Fixtures—Sliding Casement

See Hardware—Sliding Folding—Casement Window

Hardwood

Flooring

See Flooring—Wood—Specific Type

Hat

Racks

See Racks—Hat and Coat

Hatchways

Roof Access

B-D Easy	10/13
Babcock-Davis Corp.	10/13
Specifications	10/13

Heads

Drinking Fountain

See Fountains—Drinking

Exhaust Steam

Æolus Dickinson Industrial Div. Paul Dickinson, Inc.	9/9
Dickinson	9/9

Leader—Copper

See	8/45
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Leader—Lead

Hope's Windows Inc.	11/9
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Pump—Deep Well

See Pumps—Deep Well—Plunger

Heads—Cont.

Shower Bath

See Baths—Shower or Needle

Sprinkler

See Sprinkler—Systems—Automatic—Fire

Heat

Exchangers, Interchangers, Economizers, etc.

(See also Heaters—Water—Indirect)

Young Radiator Co.	26/70
See also	22/32; 24/40; 24/41; 24/48

Generation

See Boilers; Heaters; Furnaces

Regulators

See Controllers—Temperature; Thermostats; Regulators—Dampers

Heaters

(See also Radiators—Brass or Copper; Radiators—Cabinet; Radiators—Tubular; Radiators—Concealed; Furnaces; Radiators—Electric)

Air Conditioning

See Heaters—Unit

Air—Convactor Type

See Radiators—Convactor Type

Air—Electric—Auxiliary or Bathroom

Biltin	25/31
Peerless Mfg. Corp., Inc.	26/106
Solar Glow	24/47
Westinghouse Electric & Mfg. Co.	24/47

Air—Electric—Auxiliary or Bathroom—Fan Type

Thermador Electrical Mfg. Co.	26/71
See	24/45

Air—Electric—Fireplace or Mantel

Colonial Fireplace Co.	26/101
Glo-Hot	26/101
Solar Glow	24/47
Westinghouse Electric & Mfg. Co.	24/47
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Air—Electric—Portable—Fan Type

Thermador Electrical Mfg. Co.	26/71
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Air—Electric—Thermostatically Controlled

(See also Specific Type of Heater)

Westinghouse Electric & Mfg. Co.	24/47
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Air—Electric Thermostatically Controlled—Fan Type

Thermador Electrical Mfg. Co.	26/71
Watchman	26/71

Air—Fireplace—Units

Covert, H. W., Co.	26/102
Heatilator Co.	26/105
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Air—Warm Air Furnaces

See Furnaces—Warm Air

Convactor Type

See Radiators—Convactor Type

Fireplace

See Heaters—Air—Electric Fireplace

Furnace Type

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Garage—Electric

See Radiators—Electric; Heaters—Air—Electric

Feed Water

Whitlock Coil Pipe Co.	24/48
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Hot Water

See Heaters—Water; Boilers

Immersion Electric

Westinghouse Electric & Mfg. Co.	24/47
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Indirect

See Heaters—Water—Indirect

Laundry

See Specific Type of Water Heater

Heaters—Cont.

Oil—Fuel

Anthony Company	26/22
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Submerged Water

See Heaters—Water—Indirect

Unit—Boiler only—Coal, Gas or Oil Fired

(See also Oil Burning Equipment)

Electrol Incorporated	26/5
Electrol-Kewanee	26/5
Federal	26/24
Gilbarco	26/8
Gilbert & Barker Mfg. Co.	26/8
Heat-An-Aire	26/13
May Oil Burner Corp.	26/13
Oil-O-Matic	26/36
Williams Oil-O-Matic Heating Corp.	26/36
See also	26/26; 26/78

Unit—Boiler—Coal, Gas or Oil Fired—Fan or Blower, Air Washer, Moistener and/or Filter

(See also Oil Burning Equipment; Boilers—Heating; Furnaces)

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp.	26/1
Carrier Engineering Corp.	26/3
Clarage Fan Co.	26/2
Climator	26/14
Conditioner	26/4
Delco Appliance Corp.	26/4
Delco-Heat	26/4
Duootherm	26/2
Electrol-American	26/5
Electrol Incorporated	26/5
Fox Furnace Co., Div. of American Radiator & Sanitary Corp.	26/6
Frigidaire Division, General Motors Corp.	26/7
G-E	26/9
General Electric Co.	26/9
Gilbarco	26/8
Gilbert & Barker Mfg. Co.	26/8
Heat-An-Aire	26/13
Holland Furnace Co.	26/10
May Oil Burner Corp.	26/13
Modernaire	26/14
Moditherm	26/2
Mueller, L. J., Furnace Co.	26/14
Oil-O-Matic	26/19
Perfection Stove Co., Inc.	26/17
Sunbeam	26/6
Superfex	26/17
Tempered-Aire	26/20
Weathermaker	26/3
Williams Oil-O-Matic Heating Corp.	26/19
Wood, Gar, Industries, Inc.	26/20
York Ice Machinery Corp.	22/32
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Unit—Indirect Heat with Blower or Fan

Carrier Engineering Corp.	26/3
Delco Appliance Corp.	26/4
Delco-Heat	26/4
De Luxe	26/16
Dunham, C. A., Co.	26/78
Featherfin	26/67
Featherweight	26/67
Grinnell Co., Inc.	26/69
Hold-Heet	26/15
Kroy	26/3
Mueller, L. J., Furnace Co.	26/14
Rexvane	26/65
Russell Electric Co.	26/15
Sturtevant, B. F., Co.	26/16; 26/65
Thermolier	26/69
Utility	26/67
Weathermaker	26/3
Wing, L. J., Mfg. Co.	26/67
Young Radiator Co.	26/70
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Specifications	26/16

Unit—Indirect Heat with Fan or Blower, Air Moistener, Washer and/or Filter

Arex Co.	26/61
Carrier Engineering Corp.	26/3
Clarage Fan Co.	26/2

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Duootherm	26/2
Frigidaire Division, General Motors Corp.	26/7
G-E	26/9
General Electric Co.	26/9
Hold-Heet	26/15
Holland Furnace Co.	26/10
Moditherm	26/2
Mueller, L. J., Furnace Co.	26/14
Russell Electric Co.	26/15
Sturtevant, B. F., Co.	26/16
Tempered-Aire	26/20
Weathermaker	26/3
Weathermaking System	26/3
Wood, Gar, Industries, Inc.	26/20
York Ice Machinery Corp.	22/32; 26/21
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Specifications	26/16

Unit and Cooler Combination

Air-O-Matic	26/19
American Blower Corp., Div. of American Radiator & Standard Sanitary Corp.	26/1
Carrier Engineering Corp.	26/3
Clarage Fan Co.	26/2
Climator	26/14
Duootherm	26/2
Fox Furnace Co., Div. of American Radiator & Standard Sanitary Corp.	26/6
Frigidaire Division, General Motors Corp.	26/7
G-E	26/9
General Electric Co.	26/9
Grinnell Co., Inc.	26/69
Hold-Heet	26/15
Kelvinator Corp.	26/12
May Oil Burner Corp.	26/13
Moditherm	26/2
Mueller, L. J., Furnace Co.	26/14
Russell Electric Co.	26/15
Sirocco	26/1
Sunbeam	26/6
Tempered-Aire	26/20
Thermolier	26/69
Weathermaker	26/3
Westinghouse Electric & Mfg. Co.	26/18
Williams Oil-O-Matic Heating Corp.	26/19
Wood, Gar, Industries, Inc.	26/20
York Ice Machinery Corp.	26/21
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Water—Coal Fired—Combination Boiler and Burner

Columbia Radiator Co.	26/25
Mueller, L. J., Furnace Co.	26/14
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Water—Coal Fired—Garbage Burner Combination

See Incinerators—Garbage or Waste

Water—Electric

Westinghouse Electric & Mfg. Co.	22/15; 24/47
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Water—Electric—Combination Boiler and Heating Element—Manual or Automatic

Aquatherm	24/36
Dahlquist Mfg. Co.	24/36
Thermador Electrical Mfg. Co.	24/45
Turbo	24/36
Turbo-Aquatherm	24/36
Westinghouse Electric & Mfg. Co.	24/47

Water—Gas—Combination Boiler and Burner—Manual or Automatic

(See also Boilers—Heating—Gas Fired)

Aquatherm	24/36
Dahlquist Mfg. Co.	24/36
International Nickel Co., Inc.	24/39
Monel Metal	24/39
New Economat	24/42
New Monarch	24/42
New Save-omatic	24/42
Pittsburg Water Heater Corp.	24/42
Ruud-DeSoto	24/44

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Water—Gas—Combination Boiler and Burner—Manual or Automatic—Cont.

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Turbo-Aquatherm	24/36
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Whitehead	24/39

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Dahlquist Mfg. Co.	24/36
International Nickel Co., Inc.	24/39
Monel Metal	24/39
Pittsburg Water Heater Corp.	24/42
Ruud-DeSoto	24/44
Ruud Mfg. Co.	24/44
Whitehead	24/39

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Chase Brass & Copper Co., Inc.	26/68
Eterno	24/48
Fre Flo	24/40
Patterson-Kelley Co.	24/41
Smith, H. B., Co.	26/33
Spencer Heater Co.	26/34
Sterling Engineering Co.	26/92
Taco	26/33; 26/34
Whitlock Coil Pipe Co.	24/48
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Water—Indirect—Non-storage

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Dahlquist Mfg. Co.	24/36
Excelso Products Corp., Div. of American Radiator & Standard Sanitary Corp.	24/37
G & C	24/38
Gerstein & Cooper Co.	24/38
National Pipe Bending Co., Inc.	24/40
Patterson-Kelley Co.	24/41
Pittsburg Water Heater Corp.	24/42
Red Head	24/40
Taco Abbott	24/46
Taco Heaters, Inc.	24/46
Turbo-Aquatherm	24/36
Whitlock Coil Pipe Co.	24/48
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See Heaters—Water—Gas Combination—Boiler and Burner; Heaters, Water—Indirect—Instantaneous or Non-storage

Water—Oil Fired—Combination Boiler and Burner—Manual or Automatic

(See also Boilers—Heating—Oil Fired)

Arco-Petro	26/31
Delco Appliance Corp.	26/4
Delco-Heat	26/4
Electrol Incorporated	26/5
Electrol-American	26/5
Electrol-Kewanee	26/5
G-E	26/9
General Electric Co.	26/9
Genii	26/32
Gilbert & Barker Mfg. Co.	26/8
Johnson, S. T., Co.	26/28
Kelvinator Corp.	26/12
May Oil Burner Corp.	26/13
Nu-Way Corp.	26/32
Oil-O-Matic	26/36
Petroleum Heat and Power Co.	26/31
Quiet May	26/13
Taco	26/34
Williams Oil-O-Matic Heating Corp.	26/36
Wood, Gar, Industries, Inc.	26/20

Water—Swimming Pool

See Specific Type of Heater

Heating Systems

Bathroom

See Heaters—Air—Electric—Auxiliary or Bathroom

Greenhouse and Conservatory

See Greenhouses and Conservatories; Specific Type of Heating System

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Hot Water

Beaton & Cadwell Mfg. Co.	26/74
Cadwell	26/74
Hitchings & Co.	23/36
Perkheater	23/36
Thrush, H. A., & Co.	26/83
See also	23/37

Hot Water—Circulators for

Penberthy Injector Co.	26/91
Sterling Engineering Co.	26/92
Thrush, H. A., & Co.	26/83
See also	24/31

Vacuum—Vapor and Modulation

B&J	26/77
Barnes & Jones Inc.	26/77
Differential-Vacuum-Heating	26/78
Dunham, C. A., Co.	26/78
Improved	26/84
Moderator	26/84
Webster, Warren, & Co.	26/84

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Warm Air—Forced Circulation

(See also Furnaces—Warm Air—Forced Circulation)	
Holland Furnace Co.	26/10
Vaporaire	26/10

Heating and Ventilating

Apparatus

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Units Combined

See Heaters—Air Conditioning—Unit

Hinges

Butt—Ball Bearing

Rixson, Oscar C., Co.	18/29
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Butt—Double Acting

Bommer Spring Hinge Co.	18/26
Chicago Spring Hinge Co.	18/27
Ever Ready	18/26
Milwaukee Stamping Co.	18/28
Nu-Jamb	18/28
Simplex	18/27
Triplex	18/27
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Butt—Spring

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Casement—Cleaning Hinge

See Hardware—Cleaning Hinge—Casement Window

Casement—Sash Lifting

Grant Pulley and Hardware Co.	18/34
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See Hardware—Casement Window

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Garage Door

R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22

Gate—Spring Pivot or Spring Butt

Bommer Spring Hinge Co.	18/26
Chicago Spring Hinge Co.	18/27
Lawson-Milwaukee	18/28
Milwaukee Stamping Co.	18/28
Sagless	18/27
Simplex	18/27
Triplex	18/27
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Soss Mfg. Co., Inc.	18/31
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Sanymetal Products Co., Inc.....	20/17
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Matchless	18/28
Milwaukee Stamping Co.....	18/28
Sanymetal Products Co., Inc.....	20/17
Shelby Spring Hinge Co.....	18/30

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Bommer Spring Hinge Co.....	18/26
Chicago Spring Hinge Co.....	18/27
Ever Ready	18/26
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Chicago Spring Hinge Co.....	18/27
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Matchless	18/28
Milwaukee Stamping Co.....	18/28
Premier	18/27
Relax	18/27
Shelby Spring Hinge Co.....	18/30

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Shelby Spring Hinge Co.....	18/30
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Grant Pulley and Hardware Co.....	18/34
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(See also Dumbwaiters; Elevators; Lifts)

Ash or Merchandise—Platform

See Elevators

Ash or Merchandise—Sidewalk—Non-telescopic

(Including Hand, Hydraulic and Power)

Beckwith Elevator Co., Inc.....	26/109
Capital Lift & Mfg. Co.....	30/3
Chelsea Elevator Co.....	30/2
Potts Ash Hoist Corp.....	26/113
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(Including: Hydraulic, Hand or Power)

Beckwith Elevator Co., Inc.....	26/109
Capital Lift & Mfg. Co.....	26/110
Eliau, Frank, & Co.....	26/111
G&G Hoist Corp.....	26/112
Hoistwell	26/111
Potts Ash Hoist Corp.....	26/113
Washburn & Granger, Inc.....	22/46
Specifications	26/111; 26/113

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Grant Pulley and Hardware Co.....	18/34
Hope's Windows, Inc.....	11/9
Kawneer Co.	11/10
Mesker Bros. Iron Co.....	11/11
Normandy	11/19
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Sealair	11/10
Thru-Screen	18/33
Truscon Steel Co.....	11/12
Rixson, Oscar C., Co.....	18/29
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Getty, H. S., & Co., Inc.....	18/35
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House and Roof

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American Blower Corp., Div. of American Radiator & Standard Sanitary Corp.	26/1
Carrier Engineering Corp.	26/3
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Johnson Service Co.	26/79
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Hold-Heat	26/15
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Minneapolis-Honeywell Regulator Co.	26/81
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Marsh Electro Chlorination Co., Inc.	23/31
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Pyroneel Co., Inc., Div. of J. C. Rochester & Co., Inc.	22/44
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Insulation

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Columbia	13/11
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Red Top	13/25
Ruberoid Co.	13/41
Sealal	13/7
Slaters Felt	8/11
Standard Lime & Stone Co.	13/13
USG	8/19
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United States Mineral Wool Co.	13/11
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Delco Appliance Corp..... 26/4

Delco-Heat 26/4

Electrol-American 26/5

Electrol Incorporated 26/5

Electrol-Kewanee 26/5

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Nebulyte 26/22

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See Flatting Oil for Paint

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See Furnaces—Oil Fired

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See Linseed—Oil

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See Waterproofing

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See Paint—Acid, Alkali or Oil Resistant

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Casement Windows

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(Including Manual, Electric or Pneumatic)

Cornell Iron Works, Inc.	10/20
ES	30/13
Elevator Supplies Co., Inc.	30/13
Grant Elevator Equipment Corp.	30/14
Otis Elevator Co.	30/8
PowR-Way	30/15
Richards-Wilcox Mfg. Co., Inc.	30/15
Richmond Fireproof Door Co.	10/16
Rich-Wil	30/15
St. Louis Fire Door Co.	10/18
Security Fire Door Co.	10/17
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Wagner Mfg. Co.	30/16
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Door—Garage—Radio Control

Barber-Colman Co.	18/15
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Door—Photo-electric Unit

Kinnear Mfg. Co.	10/22
Magic Doors	10/14
Stanley Works	10/14

Door—Prison or Jail

See Jail Construction and Equipment

Door—Sliding, Swinging, Folding, Rolling, etc.

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Barber-Colman Co.	18/15
Kinnear Mfg. Co.	10/22
Magic Doors	10/14
McKee Door Co.	18/21
OveR-Way	18/22
R-W	18/22
Richards-Wilcox Mfg. Co., Inc.	18/22
Richmond Fireproof Door Co.	10/16
Rol-Top	10/22
St. Louis Fire Door Co.	10/18
Security Fire Door Co.	10/17
Slidetite	18/22
Stanley Works	10/14
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Gem	30/14
Grant Elevator Equipment Corp.	30/14
St. Louis Fire Door Co.	10/18
Security Fire Door Co.	10/17
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Bayley, William, Co.	11/2
Casement Hardware Co.	18/33
Ceco	3/63
Concrete Engineering Co., Inc.	3/69
Dayton Greenhouse Mfg. Co.	18/39
Detroit Steel Products Co.	11/5
Federal Steel Sash Co., Inc.	11/6
Fenestra	11/5
Gibson & Kirk Co.	18/40
Mesker Bros. Iron Co.	11/11

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Win-Dor	18/33
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Dean	22/46
G&G Hoist Corp.	26/112
Potts Ash Hoist Corp.	26/113
Washburn & Granger, Inc.	22/46

Theater Curtain

Clark, Peter, Inc.	23/19
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Transom

Rixson, Oscar C., Co.	18/29
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Orchestra

Elevators

See Elevators—Theater—Orchestra, Organ, Console, Stage, etc.

Organ

Color

RCA Victor	29/18
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Ornamental

Iron

See Ornamental—Metal Work

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Art Metal Construction Co.	21/2
Bohn Aluminum & Brass Corp.	7/6
Bohnalite	7/6
Bohnolloy	7/6
Bryant Electric Co.	27/7
Capitol Bronze Corp.	17/15
Cincinnati Iron Fence Co., Inc.	23/46
Ellison Bronze Co., Inc.	7/13
Enduro	7/10
Flour City Ornamental Iron Co.	7/14
Garco	7/15
Garden City Plating & Mfg. Co.	7/15
General Bronze Corp.	7/16
Gorham Co.	7/17
I-L	27/7
Jones, Harold K., Co.	27/19
Jones, Trevor F., & Co.	7/27a
Kawneer Co.	11/10; 17/18
Logan Co.	7/18
McGann, T. F., & Sons Co.	7/20
Metalcrafts	7/21
Oregon Brass Works	5/4
Penn Brass & Bronze Works	7/22
Republic Steel Corp.	7/10
Revere Copper and Brass Inc.	7/8
Smyser-Royer Co.	7/23; 28/1
Stewart Iron Works Co., Inc.	23/50
Turner Brass Works	7/25
Tyler, W. S., Co.	7/26
United States Bronze Sign Co., Inc.	7/27
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Metal Work—Enameled

See Sheet Metal—Porcelain Enameled

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See Castings—Aluminum; Ornamental—Metal Work

Cast Iron

See Ornamental—Metal Work; Castings—Iron—Architectural

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Hope's Windows Inc.	11/9
Payne-Spiers Studios, Inc.	17/9

Porcelain Enameled

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Pressed Steel

Jones, Harold K., Co.	27/19
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Edison General Electric Appliance Co., Inc. 22/20
G-E 22/20

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See Ovens—Baking; Kitchen—Equipment

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Sink—Standing—Acid Resistant

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Packing

Drain Pipe—Acid Resistant

Duriron Co., Inc. 24/14

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For Isolation or Insulation of Vibrations

See Machinery—Isolation or Insulation of Vibrations

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Systems

See Signal Systems; Telephone—Signal System Combination

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Antoxide 16/15
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Bar-Ox 16/30
Barreled Sunlight Chemic Enamel 16/31
Breer's 16/20
Cabot, Samuel, Inc. 16/9
Cemcoat 16/4
Craftex Co. 16/11
Degraco 16/13
Dehydratine No. 80 4/9
Detroit Graphite Co. 16/13
Dixon, Joseph, Crucible Co. 16/14
du Pont de Nemours, E. I., & Co., Inc. 16/15
Ferro-Fax 4/9
Flexiblac 16/9
Fume-Saf 16/30
Horn, A. C., Co. 4/9
Hornlux 4/9
Industrial 16/14
King, E. & F., & Co., Inc. 16/20
Kromik 16/29
Medusa Portland Cement Co. 3/38
R.I.W. 4/20
Rocor 16/6
Rocorlite 16/6
S.R.P. 16/4
Save-Lite 16/29
Sherwin-Williams Co. 16/29
Sonneborn, L., Sons, Inc. 16/4
Standard Waterproofing Corp. 4/19
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Truscon Laboratories 16/30
U. S. Gutta Percha Paint Co. 16/31
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16/29; 16/30; 16/31

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Atlantic Gypsum Products Co., Inc. 13/28
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Modex 16/28a
Pittsburgh Plate Glass Co. 17/1
Reardon Co. 16/28a
U. S. Gutta Percha Paint Co. 16/31
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Aluminum Co. of America. 7/2; 16/5
Berry Brothers, Inc. 16/8
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Detroit Graphite Co. 16/13
Dixon, Joseph, Crucible Co. 16/14
Dulux 16/15
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Hi-Brilliant 16/14
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Berry Brothers, Inc. 16/8
Dixon, Joseph, Crucible Co. 16/14
Dixspar 16/14
Lionoil 16/8
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Eagle-Picher Sales Co. 16/17

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Aquabar Waterproofing Products, Inc. 4/3
Artstone Rocor Corp. 16/6
Barreled Sunlight Granolith 16/31
Barreled Sunlight Plaster Sealer 16/31
Bay State 16/16
Berry Brothers, Inc. 16/8
Billings-Chapin Co. 4/4
Bondex 16/28a
Boston Varnish Co. 16/7
Cabot, Samuel, Inc. 16/9
Carey, Phillip, Co. 8/11
Cemcoat 16/4
CemGard 16/13
Cementex 4/3
Cementhide 17/1

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Brick, Cement, Concrete, Stucco, Stone—Preservative Finishing Coats—Cont.

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<i>Cemtex</i>	16/13
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<i>Conco</i>	4/3
<i>Craft Mill</i>	16/8
<i>Craftco</i>	16/11
Craftex Co.	16/11
<i>Decotint</i>	16/29
<i>Degraco</i>	16/13
Detroit Graphite Co.	16/13
Dixon, Joseph, Crucible Co.	16/14
Devoe & Reynolds Co., Inc.	16/16
<i>Double White</i>	16/9
<i>Dri-Coat</i>	4/4
<i>Drival</i>	4/4
<i>Du-Lite</i>	16/15
du Pont de Nemours, E. I., & Co., Inc.	16/15
<i>Dutch Boy</i>	16/25
<i>Elasticote</i>	4/3
<i>Flex-Sicco</i>	4/20
<i>Floor-Gard</i>	16/13
<i>Granitex</i>	16/30
<i>Hampden Sunray</i>	16/20
Horn, A. C., Co.	4/9
<i>Hornrock</i>	4/9
<i>Kalso</i>	16/29
King, E. & F., & Co., Inc.	16/20
<i>Koncrex</i>	4/9
<i>Konkerit</i>	4/20
<i>Kyanize</i>	16/7
<i>Lionoil</i>	16/8
<i>Liquid Lite</i>	16/27
<i>Maintenance</i>	16/14
Master Builders Co.	4/13
<i>Mastertex</i>	4/13
Medusa Portland Cement Co.	3/38
<i>Merco</i>	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Minwax Co., Inc.	4/12
<i>Modex</i>	16/28a
Muralo Co., Inc.	16/24
<i>Mural-tone</i>	16/24
Murphy Varnish Co.	16/23
National Lead Co.	16/25
O'Brien Varnish Co.	16/27
<i>Old Virginia White</i>	16/9
<i>Olo</i>	16/28
Passonno-Hutcheon Co.	16/28
Pittsburgh Plate Glass Co.	17/1
<i>Plasco</i>	17/1
<i>R.I.W.</i>	4/20
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<i>Rocor</i>	16/6
<i>Roc-Seal</i>	16/28
<i>Save-Lite</i>	16/29
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	16/4
Standard Waterproofing Corp.	4/19
<i>Stanwaco</i>	4/19
StoneTex	4/21; 16/30
<i>Stucco Seal</i>	14/25
<i>Stuccotex</i>	4/21
<i>Sunflex</i>	16/11
<i>Super-Por-Seal</i>	16/30
<i>Symmentrex</i>	4/9
<i>T.T.O.</i>	16/27
Toch Brothers Inc.	4/20
Truscon Laboratories	4/21; 16/30
U. S. Gutta Percha Paint Co.	16/31
United States Gypsum Co.	16/32
<i>USG</i>	16/32
<i>Wearite</i>	16/21
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Cement

See Paint—Portland Cement

Cement Floor

See Paint—Brick, Cement, Concrete, Stucco, Stone—Preservative Finishing Coats; Cement

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See Paint—Water

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See Paint—Pigments

Creosote or Bitumen Sealing

Jennison-Wright Co.	15/59
<i>Kreolite Insulating Coating</i>	15/59
<i>LumeTex-Bitubar</i>	16/30
Truscon Laboratories	16/30

Deck

See Paint—House—Ready Mixed

Enamel

See Enamel

Flat Wall Finish

See Paint—Wall Finish—Flat, Egg Shell or Gloss

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<i>Bar-Ox</i>	16/30
<i>Degraco</i>	16/13
Dixon, Joseph, Crucible Co.	16/14
<i>Hold-Gard</i>	16/13
<i>Industrial</i>	16/14
<i>LumeTex</i>	16/30
<i>R.I.W.</i>	4/20
Sherwin-Williams Co.	16/29
Toch Brothers Inc.	4/20
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<i>Berbro</i>	16/8
Berry Brothers, Inc.	16/8
<i>Craftcoat</i>	16/11
Craftex Co.	16/11
<i>Texture</i>	16/32
United States Gypsum Co.	16/32
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Graphite

<i>Degraco</i>	16/13
Detroit Graphite Co.	16/13
Dixon, Joseph, Crucible Co.	16/14
<i>Industrial</i>	16/14
<i>Ironhide</i>	17/1
Pittsburgh Plate Glass Co.	17/1
<i>Superior</i>	16/13
Specifications	16/14; 17/1

House—Ready Mixed

(Including Floors, Porches, Decks)

Aquabar Waterproofing Products, Inc.	4/3
Berry Brothers, Inc.	16/8
<i>Berrycraft</i>	16/8
Boston Varnish Co.	16/7
Cabot, Samuel, Inc.	16/9
Certain-teed Products Corp.	16/10
<i>Collopake</i>	16/9
<i>Degraco</i>	16/13
Detroit Graphite Co.	16/13
Devoe & Reynolds Co., Inc.	16/16
<i>Double White</i>	16/9
du Pont de Nemours, E. I., & Co., Inc.	16/15
<i>Floortex</i>	4/3
<i>Florhide</i>	17/1
King, E. & F., & Co., Inc.	16/20
<i>Kyanize</i>	16/7
<i>Master Painters'</i>	16/28
<i>Mercotone</i>	16/21
Merkin, M. J., Paint Co., Inc.	16/21
O'Brien Varnish Co.	16/27
<i>Old Virginia White</i>	16/9
<i>Olo</i>	16/28
<i>Outside Barreled Sunlight</i>	16/31
<i>Parchide</i>	17/1
Passonno-Hutcheon Co.	16/28

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Pittsburgh Plate Glass Co.	17/1
Plasco	17/1
Plasticote	16/21
SWP	16/29
Sherwin-Williams Co.	16/29
Snolite	17/1
T.T.O.	16/27
Trimal	16/21
U. S. Gutta Percha Paint Co.	16/31
Wallhide Exterior Primer	17/1
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See Caulking and Glazing; Cement—Pointing

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Degraco	16/13
Dixon, Joseph, Crucible Co.	16/14
Dulux	16/15
du Pont de Nemours, E. I., & Co., Inc.	16/15
R.I.W.	4/20
Toch Brothers Inc.	4/20
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Alcoa Albron	16/5
Aluminum Co. of America	16/5
Aquabar Waterproofing Products, Inc.	4/3
Antoxide	16/15
Bar-Ox	16/30
Bar-Ox Formula 97	16/30
Barrett Co.	8/3
Berry Brothers, Inc.	16/8
Boston Varnish Co.	16/7
Breer's	16/20
Cabot, Samuel, Inc.	16/9
Carey, Philip, Co.	8/11
Certain-teed Products Corp.	8/16
Collopake	16/9
Degraco	16/13
Detroit Graphite Co.	16/13
Dixon, Joseph, Crucible Co.	16/14
DuKrom	16/15
Dulux	16/15
Dulux Kromate	16/15
du Pont de Nemours, E. I., & Co., Inc.	16/15
Eagle-Picher Sales Co.	16/17
Everjet	8/3
Ferro-Keep	16/15
Flexiblac	16/9
Industrial	16/14
Iron Guard	16/13
Ironhide	17/1
King, E. & F., & Co., Inc.	16/20
Kromate	16/15
Kromik	16/29
Lastphalt	15/9
Lionoil	16/8
Maximent Co.	15/9
Merco	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Metalastic	16/29
National Lead Co.	16/25
O'Brien Varnish Co.	16/27
Olo	16/28
Passonno-Hutcheon Co.	16/28
Pittsburgh Plate Glass Co.	17/1
R.I.W.	4/20
Rocor	16/6
Rust-Sele	16/28
S.R.P.	16/4
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	16/4
Sun-Proof	17/1
T.T.O.	16/27
Toch Brothers Inc.	4/20
Tockolith	4/20
Trimal	16/21
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Truscon Laboratories	16/30
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Alba-Lux	17/1
Aquabar Waterproofing Products, Inc.	4/3
Barreled Sunlight	16/31
Berbro Hi-Grade	16/8
Berry Brothers, Inc.	16/8
Boston Varnish Co.	16/7
Britelite	16/21
Certain-teed Products Corp.	16/10
Degraco	16/13
Detroit Graphite Co.	16/13
Du-Lite	16/15
Dulux	16/15
du Pont de Nemours, E. I., & Co., Inc.	16/15
Eg-Shel	16/29
Fifty-Fifty	16/15
Hampden Sunray	16/20
King, E. & F., & Co., Inc.	16/20
Kyanize	16/7
Liquid Lite	16/27
Merco	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Modex	16/28a
Muralo Co., Inc.	16/24
Mural-tone	16/24
O'Brien Varnish Co.	16/27
Olo	16/28
Pittsburgh Plate Glass Co.	17/1
Reardon Co.	16/28a
Save-Lite	16/29
Sherwin-Williams Co.	16/29
Snolite	17/1
Super Flow	16/7
Super-Sta-White	16/13
T.T.O.	16/27
Truscon Laboratories	16/30
U. S. Gutta Percha Paint Co.	16/31
Wall-Lite	16/30
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Aluminum Co. of America	16/5
Craftcolor	16/11
Craftex Co.	16/11
Dutch Boy	16/25
Eagle-Picher Sales Co.	16/17
National Lead Co.	16/25
Texolite	16/32
USG	16/32
United States Gypsum Co.	16/32

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Bondex	16/28a
Medusa Portland Cement Co.	3/38
Muralo Co., Inc.	16/24
Reardon Co.	16/28a
Rocor	16/6
Specifications	16/6; 16/28a

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Aluminum Co. of America	16/5
Bar-Ox	16/30
Berry Brothers, Inc.	16/8
Boston Varnish Co.	16/7
Breer's	16/20
Cemtex	16/13
Degraco	16/13
Detroit Graphite Co.	16/13
Dixon, Joseph, Crucible Co.	16/14
Dulux Kromate	16/15
du Pont de Nemours, E. I., & Co., Inc.	16/15

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<i>Eagle-Picher Sales Co.</i>	16/17
<i>Industrial</i>	16/14
<i>Ironhide</i>	17/1
<i>King, E. & F., & Co., Inc.</i>	16/20
<i>Kromik</i>	16/29
<i>Lionoil</i>	16/8
<i>Merco</i>	16/21
<i>Merkin, M. J., Paint Co., Inc.</i>	16/21
<i>Metalastic</i>	16/29
<i>National Lead Co.</i>	16/25
<i>O'Brien Varnish Co.</i>	16/27
<i>Pittsburgh Plate Glass Co.</i>	17/1
<i>R.I.W.</i>	4/20
<i>S.R.P.</i>	16/4
<i>Sherwin-Williams Co.</i>	16/29
<i>Sonneborn, L., Sons, Inc.</i>	16/4
<i>T.T.O.</i>	16/27
<i>Toch Brothers Inc.</i>	4/20
<i>Tockolith</i>	4/20
<i>Trimal</i>	16/21
<i>Triple LeadKote</i>	16/20
<i>Truscon Laboratories</i>	16/30
<i>U. S. Gutta Percha Paint Co.</i>	16/31
<i>Specifications</i>	16/8; 16/14; 16/20; 16/25; 16/27; 16/29; 16/30; 17/1

Priming—Plaster

See Sizing; Enamel Undercoats; Paint—Brick, Cement, Concrete, Stucco, Stone—Preservative Finishing Coats

Priming—Wood or Metal

See Paint—House; Enamel—Undercoats; Paint—Metal Protective

Red Lead

<i>Dixon, Joseph, Crucible Co.</i>	16/14
<i>Dutch Boy</i>	16/25
<i>Eagle-Picher Sales Co.</i>	16/17
<i>Industrial</i>	16/14
<i>National Lead Co.</i>	16/25
<i>Specifications</i>	16/14

Remover

<i>Sherwin-Williams Co.</i>	16/29
<i>Taxite</i>	16/29

Roof

<i>Aquabar Waterproofing Products, Inc.</i>	4/3
<i>Carey, Philip, Co.</i>	8/11
<i>Certain-teed Products Corp.</i>	8/16
<i>Degraco</i>	16/13
<i>Detroit Graphite Co.</i>	16/13
<i>Dixon, Joseph, Crucible Co.</i>	16/14
<i>Fibrous Koting</i>	8/54
<i>Industrial</i>	16/14
<i>Ironhide</i>	17/1
<i>Koppax</i>	8/8
<i>Merkin, M. J., Paint Co., Inc.</i>	16/21
<i>Pabco</i>	15/46
<i>Perfectseal</i>	16/21
<i>Pittsburgh Plate Glass Co.</i>	17/1
<i>R.I.W.</i>	4/20
<i>Realseal</i>	16/13
<i>Rub-on</i>	8/54
<i>SWP</i>	16/29
<i>Sherwin-Williams Co.</i>	16/29
<i>Toch Brothers Inc.</i>	4/20
<i>Specifications</i>	16/14; 16/29; 17/1

Shellac

<i>Marvelac</i>	16/29
<i>Pittsburgh Plate Glass Co.</i>	17/1
<i>Sherwin-Williams Co.</i>	16/29
<i>Specifications</i>	16/29

Sizing

See Sizing; Enamel—Undercoats; Paint—Brick, Cement, Concrete, Stucco, Stone—Preservative Finishing Coats

Stack and Boiler

<i>Aquabar Waterproofing Products, Inc.</i>	4/3
<i>Bar-Ox</i>	16/30
<i>Dixon, Joseph, Crucible Co.</i>	16/14
<i>Dulux</i>	16/15
<i>du Pont de Nemours, E. I., & Co., Inc.</i>	16/15

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Paint—Cont.

Stack and Boiler—Cont.

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<i>Hi-Heat</i>	16/14
<i>Industrial</i>	16/14
<i>King, E. & F., & Co., Inc.</i>	16/20
<i>LumeTex</i>	16/30
<i>Olo</i>	16/28
<i>Passonno-Hutcheon Co.</i>	16/28
<i>R.I.W.</i>	4/20
<i>Rust-Sele</i>	16/28
<i>S.R.P.</i>	16/4
<i>Salamander</i>	16/29
<i>Sherwin-Williams Co.</i>	16/29
<i>Sonneborn, L., Sons, Inc.</i>	16/4
<i>Toch Brothers Inc.</i>	4/20
<i>Triple LeadKote</i>	16/20
<i>See also</i>	8/54
<i>Specifications</i>	16/14; 16/15; 16/29

Structural Steel

See Paint—Metal Protective; Preservatives—Metal; Paint Primers—Steel or Iron

Technical

<i>Dixon, Joseph, Crucible Co.</i>	16/14
<i>Industrial</i>	16/14
<i>R.I.W.</i>	4/20
<i>Sonneborn, L., Sons, Inc.</i>	16/4
<i>Toch Brothers Inc.</i>	4/20
<i>Truscon Laboratories</i>	16/30
<i>See also</i>	4/8
<i>Specifications</i>	16/14

Texturing

<i>Cedex Co.</i>	16/12
<i>Craftex Co.</i>	16/11
<i>Decorite</i>	16/11
<i>Eagle-Picher Sales Co.</i>	16/17
<i>Em-Bel-Lo</i>	16/32
<i>Gold Bond</i>	16/26
<i>Hi-Tex</i>	16/24
<i>Lavendex</i>	16/12
<i>Marvel-tex</i>	16/24
<i>Merco</i>	16/21
<i>Merkin, M. J., Paint Co., Inc.</i>	16/21
<i>Mertex</i>	16/21
<i>Mural-Tex</i>	16/24
<i>Muralo Co., Inc.</i>	16/24
<i>National Gypsum Co.</i>	16/26
<i>Perfectseal</i>	16/21
<i>Pittsburgh Plate Glass Co.</i>	17/1
<i>Plastic Velumina</i>	17/1
<i>Plastex</i>	16/28a
<i>Reardon Co.</i>	16/28a
<i>Red Top</i>	16/32
<i>Shadowall</i>	16/11
<i>Sherwin-Williams Co.</i>	16/29
<i>Super-Tex</i>	14/19
<i>Textone</i>	16/32
<i>USG</i>	16/32
<i>United States Gypsum Co.</i>	16/32
<i>Walltex</i>	13/29
<i>See also</i>	13/27; 13/29; 14/19; 16/4
<i>Specifications</i>	16/26; 16/28a; 17/1

Undercoating

See Paint—House; Enamel—Undercoats; Paint—Metal Protective

Wall Finish—Flat, Egg Shell or Gloss

<i>Alba-Lux</i>	17/1
<i>Alkabar</i>	16/30
<i>Aquabar Waterproofing Products, Inc.</i>	4/3
<i>Artstone Rocor Corp.</i>	16/6
<i>Asepticote</i>	16/30
<i>Barreled Sunlight</i>	16/31
<i>Berbro</i>	16/8
<i>Berry Brothers, Inc.</i>	16/8
<i>Berrycraft</i>	16/8
<i>Berrycraft Lusterlo</i>	16/8
<i>Boston Varnish Co.</i>	16/7
<i>Breer's</i>	16/20
<i>Cabot, Samuel, Inc.</i>	16/9
<i>Celoid</i>	16/7
<i>Certain-teed Products Corp.</i>	16/10
<i>Collopake</i>	16/9
<i>Craftex Co.</i>	16/11

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Paint—Cont.

Wall Finish—Flat, Egg Shell or Gloss—Cont.

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Craft Mill	16/8
Degraco-Tone	16/13
Detroit Graphite Co.	16/13
Devoe & Raynolds Co., Inc.	16/16
Duco	16/15
Du-Lux	16/15
du Pont de Nemours, E. I., & Co., Inc.	16/15
Eagle-Picher Sales Co.	16/17
Flat-Tone	16/29
Floorgard	16/13
Hampden Sunray	16/20
Interior Finish	16/27
Keystona	16/19
Keystone Varnish Co.	16/19
King, E. & F., & Co., Inc.	16/20
Kyanize	16/7
Liquid Lite	16/27
Liquid Velvet	16/27
Luxeberry	16/8
Medusa-Lite	3/38
Medusa Portland Cement Co.	3/38
Merco	16/21
Mercotone	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Modex	16/28a
Moleta	16/22
Monroe, Lederer & Taussig, Inc.	16/22
Mural-tone	16/24
Muralo Co., Inc.	16/24
National Lead Co.	16/25
O'Brien Varnish Co.	16/27
Olo	16/28
Olotone	16/28
One Coat	16/28
Passonno-Hutcheon Co.	16/28
Pittsburgh Plate Glass Co.	17/1
Plasticote	16/21
Reardon Co.	16/28a
Rice's Flow-On	16/31
Rocorlite	16/6
SWP	16/29
Satin-Amel	16/28
Satin Finish	16/27
Satin-Glo	16/29
Satin Sheen	16/19
Save-Lite	16/29
Sherwin-Williams Co.	16/29
Stiploid	16/13
Sunflex	16/11
Sun-Proof	17/1
Super-White	16/15
T.T.O.	16/27
Texolite	16/32
Tru-Flo	16/30
Tru-Seal	16/30
Truscon Laboratories	16/30
USG	16/32
United States Gypsum Co.	16/32
U. S. Gutta Percha Paint Co.	16/31
Wall-Gard	16/13
Wall-Gard Velvet	16/13
Wallhide	17/1
Wall-Lite	16/30
Wal-Wite	4/3
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Specifications	16/6; 16/7; 16/8; 16/9; 16/15; 16/20; 16/25; 16/27; 16/29; 16/30; 16/31; 17/1

Washable Wall Finish

See Paint—Wall Finish—Flat, Egg Shell or Gloss

Water

Aquabar Waterproofing Products, Inc.	4/3
Artstone Rocor Corp.	16/6
Bondex	16/28a
Calcimo	16/24
Cal-o-tint	16/24
Cementex	4/3
Cementico	16/32
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Water—Cont.

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Craftex Co.	16/11
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Cresto	16/28a
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Dutch Kalsomine	16/24
Kal	16/32
Kalkomo	17/1
King's	16/24
Merco	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Mertex	16/21
Modex	16/28a
Muralo Co., Inc.	16/24
Newkote	14/25
Pittsburgh Plate Glass Co.	17/1
Plastex	16/28a
Reardon Co.	16/28a
Rocor	16/6
Rocorlite	16/6
Sherwin-Williams Co.	16/29
Solarite	16/28a
Stuccotex	16/30
Sunflex	16/11
Suntone	16/24
Texolite	16/32
Truscon Laboratories	16/30
USG	16/32
United States Gypsum Co.	16/32
Venostone	16/28a
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Specifications	16/6; 16/28a; 17/1

Waterproofing

See Waterproofing—Paint and Compounds

White Lead

Dutch Boy	16/25
Eagle-Picher Sales Co.	16/17
National Lead Co.	16/25
Old Dutch Process	16/29
Sherwin-Williams Co.	16/29
Zilo	16/29
See also	16/15

Panelboards—Lighting and Power

(See also Switchboards)

Dead and Live Front

Circle T	27/15
ConverTi-Fuse	27/15
Saflex	27/14
Saflex Jr.	27/14
Square D Co.	27/14
Trumbull Electric Mfg. Co.	27/15
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Dead and Live Load—Knife Switches and Circuit Breakers

General Electric Co.	27/8
Nofuze	27/16
Trumbull-Totalizing-Unit	27/8
Westinghouse Electric & Mfg. Co.	27/16

Laboratory

Standard Electric Time Co.	29/9
Holtzer-Cabot Electric Co.	29/6

Paneling

Wood

See Cabinet Work; Millwork; Panels—Asbestos, Gypsum, Veneered, etc; Veneers—Wood

Panels

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See Doors—Access

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Johns-Manville	15/16; 20/6
Newmarble	15/20
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Ruberoïd Co.	15/20
Transite	20/6
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Door—Ventilating

See Ventilators—Door Panel, Transom, etc.

Fiber

See Wall—Board—Fiber

Glass

See Glass—Structural; Glassware—Sculptured—Hand Wrought

Gypsum—Veneered—Wood

Sheetrock Panelwood 14/9
United States Gypsum Co. 14/9

Metal Building—Porcelain Enameled

Toledo Porcelain Enamel Products Co. 7/24
Toledohio 7/24

Metal Surfaced

Armorpoly 12/19
United States Plywood Co., Inc. 12/19
See also 21/4

Phenolic Fiber

Formica Insulation Co. 15/15
Micarta 12/19; 15/21
Micarta-Asbestos 15/21
Micarta-Plywood 15/21
Micarta-Prewood 15/21
Micarta-Wemcore 15/21
United States Plywood Co., Inc. 12/19
Westinghouse Electric & Mfg. Co. 15/21

Phenolic Fiber—Resin Plywood

United States Plywood Co., Inc. 12/19
Weldwood 12/19

Plywood

See Plywood

Porcelain Enameled

Macotta 7/19
Maul Macotta Corp. 7/19
Toledo Porcelain Enamel Products Co. 7/24
Toledohio 7/24
See also 21/4

Rubber

See Tile—Rubber—Floor

Veneer—Cloth Backed

See Coverings—Wall—Cloth Backed Wood Veneer

Veneered—Gypsum

Sheetrock Panelwood 14/9
United States Gypsum Co. 14/9

Veneered—Wood

Pyrono 10/34
Roddis Lumber and Veneer Co. 10/35

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Alarms

See Alarms—Fire

Exit Devices—Locks

McIntire, F. N., Brass Works 23/11
Von Duprin 18/42
Vonnegut Hardware Co. 18/42
Specifications 23/11

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Bunker

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Shower

(See also Receptors—Shower Bath)

Cheney Co. 8/50

Pantry

Cabinets

See Cabinets

Sinks

See Sinks

Paper

Building

(See also Insulation—Paper Form)

Bird & Son, inc. 8/4
Blue Plaster 8/11
Carey, Philip, Co. 8/11
Certain-teed Products Corp. 8/16
Copper Armored Sisalkraft 13/1
Double-Kraft 8/18
Genasco 8/2
Metallation 13/12
Neponset 8/4
Pabco 15/46
Red Rosin 8/11
Reynolds Corp. 13/12
Ruberoid Co. 8/18
Safe-n-dry 8/18
"7-Ply" 8/18
Sisalkraft Co. 13/1
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See Flooring—Cement and Terrazzo—Curing and Protection

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A. P. W. Paper Co. 25/46
Onliwon 25/46
Red Cross 25/46

Toilet—Holders for

See Bathroom Accessories

Towel Holders

See Bathroom Accessories

Towels

A. P. W. Paper Co. 25/46
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Red Cross 25/46

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Systems

(See also Suspended Ceiling Systems)

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J-M 14/4; 20/6
Johns-Manville 14/4; 20/6
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Keasbey & Mattison Co. 13/32; 20/5
Masterwall 20/4
Milcor Steel Co. 14/7
Mills Co. 20/7
National Gypsum Co. 14/8
Penmetal 14/11
Penn Metal Co. 14/11
Snead & Co. 20/8
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Takapart Products Co. 20/11
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Partitions

Bank and Office

Acorn Wire and Iron Works 6/26
All-Metal Partition Co., Inc. 20/11a
Art Metal Construction Co. 21/2
Hauserman, E. F., Co. 20/4
Kentucky Metal Products Co., Inc. 6/29
Kmpc 6/29
Logan Co. 7/18

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Bank and Office—Cont.

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Sanymetal Products Co., Inc.	20/9
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Snead & Co.	20/8
Watson Mfg. Co., Inc.	19/12
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Specifications	6/26; 20/10

Cubicle—for Hospitals and Institutions

All-Metal Partition Co., Inc.	20/11a
American Steel Furniture Co.	20/12
Art Metal Construction Co.	23/16
Day's	20/19
Ferrometal	20/16
Flush-Metal Partition Corp.	20/14
Judd, H. L., Co., Inc.	20/19
Mills Co.	20/7
Milwaukee Stamping Co.	20/16
Panelmetal	20/14
Sanymetal Products Co., Inc.	20/17
Super-steel	20/12
WeiSteel	20/18
See also	20/4
Specifications	20/16

Dressing Room

See Partitions—Toilet, Shower or Urinal

Folding—Fabric Covered and Sound Retarding

Automaticfold	20/22
Circle A	20/22
DeLuxe	20/21
FoldeR-Way	20/24
Horn Folding Partition Co.	20/21
Multifold	20/25
Newcastle Products, Inc.	20/22
Richards-Wilcox Mfg. Co., Inc.	20/24
Selfold	20/21
Standardfold	20/22
Wilson, J. G., Corp.	20/25
Specifications	20/21

Folding—Metal Covered—Sound Retarding

DeLuxe	20/21
Horn Folding Partition Co.	20/21
Selfold	20/21
Specifications	20/21

Folding—Wood

(See also Hangers—Door—Sliding Folding Partition)

American Car & Foundry Co.	20/20
Automaticfold	20/22
Circle A	20/22
DeLuxe	20/21
Duofold	20/20
Fairhurst	20/20
FoldeR-Way	20/24
Horn Folding Partition Co.	20/21
Newcastle Products, Inc.	20/22
Overhead Door Corp.	18/20
Richards-Wilcox Mfg. Co., Inc.	20/24
Sectionfold	20/25
Selfold	20/21
Standardfold	20/22
Swedish Venetian Blind Co.	20/23
Unitfold	20/20
Wilson, J. G., Corp.	20/25
See also	10/31
Specifications	20/21

Folding—Wood—Sound Retarding

American Car & Foundry Co.	20/20
Automaticfold	20/22
Circle A	20/22
DeLuxe	20/21
Duofold	20/20
Fairhurst	20/20
FoldeR-Way	20/24
Hamlin, Irving	13/34
Hamlinized	13/34
Horn Folding Partition Co.	20/21
Newcastle Products, Inc.	20/22
Richards-Wilcox Mfg. Co., Inc.	20/24
Selfold	20/21
Standardfold	20/22
Unitfold	20/20
Specifications	20/21

Partitions—Cont.

Hollow Metal—Rolled or Pressed

All-Metal Partition Co., Inc.	20/11a
Art Metal Construction Co.	20/2; 21/2
Ebco Mfg. Co.	20/13
Flush Pilaster	20/7
Hauserman, E. F., Co.	20/4
Jamestown Metal Corp.	10/7
Junior	20/8
Masterwall	20/4
Mills Co.	20/7
Sanymetal Products Co., Inc.	20/9; 20/17
Snead & Co.	20/8
Syncro-Fit	20/7
Watson Mfg. Co., Inc.	19/12
See also	21/4
Specifications	20/2; 20/4; 20/17

Hollow Metal—Sound Retarding

Acoustiwall	20/4
Hauserman, E. F., Co.	20/4
Masterwall	20/4
Sanymetal Products Co., Inc.	20/9
Snead & Co.	20/8
Specifications	20/4

Hospital Ward

See Partitions—Cubicle—for Hospitals and Institutions

Interchangeable Adjustable—Metal

All-Metal Partition Co., Inc.	20/11a
Art Metal Construction Co.	20/2; 21/2
Dahlstrom Metallic Door Co.	20/3
Flush Pilaster	20/7
Hauserman, E. F., Co.	20/4
Junior	20/8
Masterwall	20/4
Mills Co.	20/7
Sanymetal Products Co., Inc.	20/9; 20/17
Snead & Co.	20/8
Syncro-Fit	20/7
Takapart Products Co.	20/11
See also	10/2; 10/3; 27/1
Specifications	20/2; 20/4; 20/7

Interchangeable Adjustable—Wood, Fiber Board, etc.

Automaticfold	20/22
Circle A	20/22
J-M	20/6
Johns-Manville	20/6
Newcastle Products, Inc.	20/22
Sloane, W. & J.	20/10
Standardfold	20/22
Takapart Products Co.	20/11
Transite	20/6
Specifications	20/10

Interchangeable—Open Mesh

See Partitions—Open Mesh

Jail

See Jail—Construction and Equipment

Metal Covered

Fyrgard	10/16
Richmond Fireproof Door Co.	10/16
See also	10/6; 10/11

Metal Faced Plywood

See Panels—Metal Surfaced

Metal Pressed

See Partitions—Hollow Metal—Rolled or Pressed

Open Mesh

Acorn Wire and Iron Works	6/26
Consolidated Expanded Metal Cos.	6/27
Cyclone Fence Co.	23/48
Kentucky Metal Products Co., Inc.	6/29
Kmpc	6/29
Logan Co.	7/18
Safe-T-Mesh	6/27
Steelcrete	6/27
See also	21/12; 23/49; 23/50

Rolling—Steel

See Doors—Rolling Steel

Partitions—Cont.

Rolling—Wood

<i>Circle A</i>	20/22
Kinnear Mfg. Co.	10/22
Swedish Venetian Blind Co.	20/23

Sound Retardant

See Specific Type of Partition as: Partitions—Hollow Metal—Sound Deadening

Tile

See Tile

Toilet, Shower or Urinal—Metal

All-Metal Partition Co., Inc.	20/11a
American Steel Furniture Co.	20/12
Bradley Washfountain Co.	25/25
Ebco Mfg. Co.	20/13
Ferrumetal	20/16
Fiat Metal Mfg. Co.	20/15; 25/14
Flushmetal	20/14
Flush-Metal Partition Corp.	20/14
Junior	25/14
Krinlac	20/13
Metal-Flush	20/7
Mills Co.	20/7
Milwaukee Stamping Co.	20/16
Panelmetal	20/14
Parcolite	20/13
Sanymetal Products Co., Inc.	20/17
Senior	25/14
Silentsteel	20/13
Sturdibilt	20/13
Super-steel	20/12
WeisAlloy	20/18
Weis, Henry, Mfg. Co., Inc.	20/18
WeiSart	20/18
WeiSteel	20/18
Specifications	20/15; 20/16; 20/17; 20/18; 25/14

Toilet, Shower or Urinal—Phenolic Fiber

Formica Insulation Co.	15/15
Micarta	15/21
Westinghouse Electric & Mfg. Co.	15/21
See also	12/19

Toilet, Shower or Urinal—Porcelain

General Ceramics Co.	24/15
Milwaukee Stamping Co.	25/17

Toilet, Shower or Urinal—Soapstone

Alberene Stone Corp. of Virginia	3/10
Virginia Alberene	3/10
Virginia Black Serpentine	3/10

Toilet, Shower or Urinal—Structural Glass

Carrara	17/1
Pittsburgh Plate Glass Co.	17/1
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Specifications	17/1

Vertical Sliding—Electrically Operated

Clark, Peter, Inc.	23/19
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Wire

See Partitions—Open Mesh

X-Ray Protective

Ray Proof Corp.	13/47
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Paste

For Office, School, Home, etc.

<i>Old Faithful</i>	16/1
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Pavements

Asphalt Block

See Blocks—Asphalt—Flooring and Paving

Expansion Joints for

See Joints—Expansion—Concrete

Wood Block

See Blocks—Wood—Flooring and Paving

Paving

Asphalt

See Blocks—Asphalt—Flooring and Paving

Pedestals

Flag Pole

See Flag Pole—Bases; Ornamental—Metal Work

Peelers

Vegetable

See Kitchen—Vegetable Peelers

Pencil

Lead

<i>Old Faithful</i>	16/1
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Pens

Live Stock

(See also Barn—Equipment)

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Perforated Metal

Concrete Reinforcement

Bostwick Steel Lath Co.	14/2
Channelform	14/2
Clincher-Plate	14/3
Consolidated Expanded Metal Cos.	3/48
Econo	3/52
Goldsmith Metal Lath Co.	14/3
Herringbone-Double-Mesh	11/12
Milcor Steel Co.	14/7
Phoenix	14/3
Red Top	3/52
Ryerson, Joseph T., & Son, Inc.	3/51
Ryex	3/51
Self-Sentering	11/12
Shurebond	14/3
Stay-Rib	14/7
Stay-Rib No. 3	14/7
Steelcrete	3/48
TiLath	14/7
Truscon Steel Co.	11/12
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Stair

See Treads—Safety

Wall—Cast Iron or Steel

See Hangers—Beam, Joist, Wall, etc.

Playground

Apparatus

See23/27

Plinths

Column

See Caps and Bases—Column

Tile

See Cove Base—Tile; Tile Rubber—Flooring

Plugs

Wall

Bull Dog Floor Clip Co., Inc.....	3/54
Faraday	29/8
See also	14/2; 29/20

Wall—Metal

See14/13

Plumbers'

Brass Goods

<i>Act-Easy-Pop-up</i>	25/21
Bridgeport Brass Co.	24/2
<i>Plumrite</i>	24/2
Speakman Co.	25/21

Plumbing Work and Fixtures

Cocks and Bibbs

See Cocks and Bibbs

Faucets

See Cocks and Bibbs

Lavatory Fittings

See Lavatory—Fittings

Plywood

Douglas Fir Plywood Assn.	12/17
Hardwood Products Corp.	10/32
<i>Laminex</i>	12/18
<i>Plyboard</i>	12/19
Plywood Tile and Floor Co., Inc.	15/19
United States Plywood Co., Inc.	12/19
<i>Weldwood</i>	12/19
Wheeler Osgood Sales Corp.	12/18
See also	10/35; 10/36

Glue for

See Glue—for Fabricating Panels and Veneers

Metal Surfaced

<i>Armormply</i>	12/19
United States Plywood Co., Inc.	12/19

Pointing

Cement or Compound

See Cement—Pointing; Caulking and Glazing—Compounds

Poles

Flag

See Flag Poles

Metal

(Including: *Contaper, Entasis Taper and Graduated*)

Pole and Tube Works, Inc.	6/34
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Sliding—Fire Escape

McIntire, F. N., Brass Works.	23/11
Specifications	23/11

Wood—Creosoted

See Lumber—Creosoted or Treated

Polish

Gymnasium Floor

See Flooring—Surfacer for

Liquid—Floor and Furniture

Bruce, E. L., Co.	15/51
<i>Hil-Glo</i>	16/2
Hillyard Chemical Co.	16/2
<i>Tuf-Lustre</i>	15/51
See also	16/29

Wax—Floor—Paste or Liquid

See Wax—Floor—Paste or Liquid

Pools

Swimming

See Swimming Pool—Design and Construction

Porcelain

Brick

See Brick—Enameled

Enameled Metal

Toledo Porcelain Enamel Products Co.	7/24
<i>Toledohio</i>	7/24

Porte Cochere

Metal

See Marquises

Portland

Cement

See Cement—Portland

Post

Caps and Bases

See Caps and Bases—Post

Wood—Creosoted

See Lumber—Creosoted or Treated

Potentiometers

See 29/20

Pots

Chimney

See Chimney—Caps and Pots—Clay or Terra Cotta

Pottery

Garden

Atlantic Terra Cotta Co.	3/15
Galloway Terra Cotta Co.	3/18
Kraftile Co.	3/30
See also	3/14; 3/16

Pre-fabricated

Building Material Units

Ferrocon Corp.	5/5
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Preheaters

Feed Water

See Heaters—Feed Water

Fuel Oil

See Heaters—Oil—Fuel

Preservatives

Cement Floor

See Hardeners and Densifiers—Cement and Concrete; Oil—Floor Finishing

Floor Finishing—Cement, Magnesite, Terrazzo, etc.

See Oil—Floor Finishing—Cement, Magnesite, Terrazzo, etc.

Masonry

See Paint—Brick, Cement, Concrete, Stucco, Stone; Waterproofing—Paint and Compounds

Metal

<i>Alcoa Albron</i>	16/5
Aluminum Co. of America.	16/5
<i>Antoxide</i>	16/15
Aquabar Waterproofing Products, Inc.	4/3
<i>Bar-Ox</i>	16/30
<i>Bar-Ox Formula 97</i>	16/30
Barrett Co.	8/3
Berry Brothers, Inc.	16/8
Boston Varnish Co.	16/7
<i>Breer's</i>	16/20
Cabot, Samuel, Inc.	16/9
Carey, Philip, Co.	8/11
Certain-teed Products Corp.	8/16
<i>Collopake</i>	16/9
<i>Degraco</i>	16/13
Detroit Graphite Co.	16/13
Dixon, Joseph, Crucible Co.	16/14
<i>DuKrom</i>	16/15
<i>Dulux</i>	16/15
<i>Dulux Kromate</i>	16/15
du Pont de Nemours, E. I., & Co., Inc.	16/15
Eagle-Picher Sales Co.	16/17
<i>Everjet</i>	8/3
<i>Ferro-Keep</i>	16/15
<i>Flexiblac</i>	16/9
<i>Industrial</i>	16/14
<i>Iron Guard</i>	16/13
<i>Ironhide</i>	17/1
King, E. & F., & Co., Inc.	16/20
<i>Kromate</i>	16/15
<i>Kromik</i>	16/29
<i>Lionoil</i>	16/8
<i>Lostphali</i>	15/9
Maximent Co.	15/9
<i>Merco</i>	16/21
Merkin, M. J., Paint Co., Inc.	16/21
<i>Metalastic</i>	16/29
National Lead Co.	16/25
O'Brien Varnish Co.	16/27

(Continued on Next Page)

Preservatives—Cont.

Metal—Cont.

(Continued from Previous Page)

Olo	16/28
Passonno-Hutcheon Co.	16/28
Pittsburgh Plate Glass Co.	17/1
R.I.W.	4/20
Rocor	16/6
Rust-Sele	16/28
S.R.P.	16/4
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	16/4
Static	8/6
Sun-Proof	17/1
T.T.O.	16/27
Toch Brothers Inc.	4/20
Tockolith	4/20
Trimal	16/21
Triple LeadKote	16/20
Truscon Laboratories	16/30
See also	8/54
Specifications	16/5; 16/8; 16/9; 16/14; 16/15; 16/20; 16/25; 16/27; 16/29; 16/30; 17/1

Shingle

Boston Varnish Co.	16/7
Cabot, Samuel, Inc.	16/9
Certain-teed Products Corp.	16/10
Conservo	16/9
Edham	8/61
Kyanize	16/7
Olo	16/28
Passonno-Hutcheon Co.	16/28
Pitcairn	17/1
Pittsburgh Plate Glass Co.	17/1
Sherwin-Williams Co.	16/29
Tor-on	17/1
Weatherbest Corp.	8/60
Weyerhaeuser Sales Co.	8/61
See also	8/8; 8/58
Specifications	16/7; 16/9; 16/29; 17/1

Wood

(See also Lumber—Insect Preventive Treatment for)

Alcoa Albron	16/5
Aluminum Co. of America	16/5
American Lumber & Treating Corp.	12/1
Avenarius Carbolineum	12/3
Barrett Co.	8/3
Bruce, E. L., Co.	15/51
Cabot, Samuel, Inc.	16/9
Carbolic-ol	16/29
Carbolineum Wood Preserving Co., Inc.	12/3
Carbosota	8/3
Certain-teed Products Corp.	8/16
Conservo	16/9
DuPont	12/2
Eastman	12/7
Grasselli Chemical Co., Inc.	12/2
Hydronon	8/3
Koppers Products Co.	8/8
Lignophol	16/4
Minwax Co., Inc.	4/12
NO-D-K	12/7
Protexol Corp.	12/5
Reilly Tar & Chemical Corp.	12/6
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	16/4
Tennessee Eastman Corp.	12/7
Terminix	12/8; 15/51
Terminix, Div. of E. L. Bruce Co.	12/8
Wolman Salts	12/1
Wood Preserving Corp.	12/9
See also	15/59
Specifications	4/12; 12/2; 12/3; 16/4; 16/9

Wood Floor

American Crayon Co.	16/1
Aquabar Waterproofing Products, Inc.	4/3
Bruce, E. L., Co.	15/51
Bruce-Way	15/51
Carbolic-ol	16/29
Floor-Seal	16/29
Floortex	4/3
Gym-Finish	16/2
Hil-Glo	16/2
Hillyard Chemical Co.	16/2

(Continued in Next Column)

Preservatives—Cont.

Wood Floor—Cont.

(Continued from Previous Column)

Huntington Laboratories, Inc.	16/3
Lignophol	16/4
Minwax Co., Inc.	4/12
Old Faithful	16/1
Permatite	16/1
R.I.W.	4/20
Seal-O-San	16/3
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	16/4
Toch Brothers, Inc.	4/20
Toxbro	4/20
Specifications	4/12; 16/2; 16/4; 16/29

Pressure

Indicators or Recorders

See Specific Products

Relieving—Structural Joints

See Joints—Structural—Pressure Relieving

Vessels

Dahlquist Mfg. Co.	24/36
Thrush, H. A., & Co.	26/83

Primers

Wood and Metal

See Fillers; Paint; Sizing, etc.

Prison

Construction and Equipment

Fries and Son Steel Construction and Engineering Co., Inc.	23/12
Roanoke Iron & Bridge Works, Inc.	23/13
Southern Prison Co.	23/14
Stewart Iron Works, Co., Inc.	23/15

Program

Clocks, Bells, etc.

See Clock Systems

Distribution Systems

(Radio Receivers and Reproducer Sets for use in these Systems)

Graybar Electric Co., Inc.	27/5
Western Electric Co.	29/19

Projectors

Electric—Theater—Scenic Effects, etc.

Kliegl Bros.	28/18
See also	28/13

Floodlighting

Aqualux	28/9
Belson Mfg. Co.	28/12
Bel-Sun-Lite	28/12
Bright Light Reflector Co., Inc.	28/11
Curtis Lighting, Inc.	28/14
G-E	28/17
General Electric Co.	28/17
Graybar Electric Co., Inc.	28/5
Jumbo-Isolux	28/19
Kliegl Bros.	28/18
Silo-A-King	28/11
Westinghouse Electric & Mfg. Co.	28/9
Wheeler Reflector Co.	28/19
X-Ray	28/14
See also	23/27; 28/13

Motion Picture

See Sound Picture Equipment

Spotlight

Belson Mfg. Co.	28/12
Bel-Sun-Lite	28/12
Bright Light Reflector Co., Inc.	28/11
Curtis Lighting, Inc.	28/14
G-E	28/17
General Electric Co.	28/17
Kliegl Bros.	28/18
Silo-A-King	28/11
Westinghouse Electric & Mfg. Co.	28/9
X-Ray	28/14
See also	28/13

Proscenium

Lights

See Stage Fittings and Lighting—Electrical

Protective

Coatings or Compounds—Steel, Concrete, etc.

See Paint; Waterproofing—Paint and Compounds

Devices—Bank, Office, etc.—Gas

Diebold Safe & Lock Co. 23/6

Protectors

Conductor and Sewer Pipe

See Shoes—Leader

Public Address

Systems

(Including: Microphones, Amplifiers, Loudspeakers, etc.)

American Automatic Electric Sales Co. 29/12

Autelco 29/12

Electro-Acoustic Products Co. 29/17

Faraday 29/8

Graybar Electric Co., Inc. 27/5

RCA Victor 29/18

Standard Electric Time Co. 29/9

Western Electric Co. 29/19

See also 29/10

Pulleys

Sash—Cast Iron

Ace 18/34

Andersen Foundry Co. 18/2

Cleveland Lock Works 18/1

Gem 18/34

Grant Pulley and Hardware Co. 18/34

Lee 18/34

Noiseless 18/2

Star 18/34

Specifications 18/2

Sash—Overhead

Cleveland Lock Works 18/1

Grant Pulley and Hardware Co. 18/34

Sash—Pressed Steel

Grant Pulley and Hardware Co. 18/34

Pull-out

Garment Carriers

See Garment—Carrier Equipment

Pulpits

Wood, Metal, Marble, etc.

See Ecclesiastical Furniture and Accessories

Pulverizers

Coal

Whiting Corp. 26/42

Pumping

Sets

Deming Co. 24/30

Goulds Pumps, Inc. 24/31

Myers, F. E., & Bro. Co. 24/32

Westco Pump Corp. 24/34

Yoemans Brothers Co. 24/35

See also 25/1

Pumps

Bilge

(See also Ejectors—Sewage)

Deming Co. 24/30

Deming-Mueller 24/30

Drain-Dri 24/35

Goulds Pumps, Inc. 24/31

Penberthy Injector Co. 24/33

Westco Pump Corp. 24/34

Yoemans Brothers Co. 24/35

See also 24/32

Boiler Feed

See Specific Type of Pump

Booster

See Specific Type of Pump

Pumps—Cont.

Centrifugal

Deming Co. 24/30

Deming-Mueller 24/30

Goulds Pumps, Inc. 24/31

Motopump 24/35

Turret 24/35

Westco Pump Corp. 24/34

Yoemans Brothers Co. 24/35

See also 24/14; 26/78

Contractors

See Pumping Sets

Deep Well—Centrifugal

Westco Pump Corp. 24/34

Deep Well—Plunger

Deming Co. 24/30

Goulds Pumps, Inc. 24/31

Myers, F. E., & Bro. Co. 24/32

Oil-Rite 24/30

Deep Well—Turbine

Deming Co. 24/30

Westco Pump Corp. 24/34

Fire Protection or Underwriters

Goulds Pumps, Inc. 24/31

Westco Pump Corp. 24/34

Fuel Oil

See Oil—Burning Systems; Oil-Burning Equipment

Hand

See also 24/32

Hot Water Circulating—Heating System

See Heating Systems—Hot Water—Circulators for

House or Tank—Water Supply

See Pumps—Centrifugal; Pumps—Power; Pumps—Rotary; Pumping Sets

Plunger

See Pumps—Deep Well Plunger; Pumps—Power

Power

Bulldozer 24/32

Deming Co. 24/30

Myers, F. E., & Bro. Co. 24/32

Penberthy Injector Co. 24/33

Westco Pump Corp. 24/34

See also 25/41

Refrigeration

See Refrigerating and Ice Making—Machinery and Plants

Sewage Disposal

See Pumps—Bilge; Ejectors—Sewage

Shallow Well

Bulldozer 24/32

Deming Co. 24/30

Goulds Pumps, Inc. 24/31

Marvel 24/30

Myers, F. E., & Bro. Co. 24/32

Oil-Rite 24/30

Westco Pump Corp. 24/34

Special

(Other than Steam, Air, Gas, Oil Fuel, Oil and Water)

Deming Co. 24/30

Deming-Mueller 24/30

Flexi-Unit 24/31

Goulds Pumps, Inc. 24/31

See also 23/30; 24/32; 24/34; 24/35

Spray

See 24/32

Sump

See Pumps—Bilge; Ejectors—Sewage

Turbine

(See also Pump—Deep Well Turbine)

Uni-Bilt 24/34

Westco Pump Corp. 24/34

Vacuum

Hoffman-Economy 26/87

Hoffman Specialty Co., Inc. 26/87

Sterling Engineering Co. 26/92

See also 24/35

Water Supply Systems

See Water—Supply Systems—Hydro-pneumatic or Storage

Pumps and Receivers

Condensation

Goulds Pumps, Inc.	24/31
Hi-Lo	24/35
Hoffman-Economy	26/87
Hoffman Specialty Co., Inc.	26/87
Sterling Engineering Co.	26/92
Westco Pump Corp.	24/34
Yoemans Brothers Co.	24/35
See also	26/78

Purifiers

Air, Gas, Steam or Liquids

See Specific Products as Filters, Washers, etc.

Push Buttons

Electric—Bells, Buzzers, etc.

See 29/3

Putty

Acid Resistant

(See also Caulking and Glazing—Compounds)

Plastic Products Co.	17/13
Plastoid	17/13
Plastoid Greenhouse	17/13
Plastoid Monitor	17/13

Cold Water

USG	16/32
United States Gypsum Co.	16/32

Metal Sash

Breer's	16/20
King, E. & F., & Co., Inc.	16/20
Kwick Glaze	4/21
Pecora Paint Co., Inc.	3/42
Plastic Products Co.	17/13
Plastoid	17/13
Plastoid Greenhouse	17/13
Plastoid Monitor	17/13
Truscon Laboratories	4/21

Wood Sash

King, E. & F., & Co., Inc.	16/20
Kinglaze	16/20
Plastic Products Co.	17/13
Plastoid	17/13
Plastoid Greenhouse	17/13
Plastoid Monitor	17/13

Q

Quick Setting

Cement and Concrete

See Accelerators

Raceway

Electric

See Conduit—Electric—Metal Moulding or Raceway

R

Racks

(See also Shelving—Steel)

Barrel Storage

Maforco	22/23
Market Forge Co.	22/23
See also	6/19

Basket

A-S-E	21/7
All-Steel-Equip Co., Inc.	21/7
Berger Mfg. Co., Div. of Republic Steel Corp.	21/9
Berloy	21/9
See also	21/15

Bottle

See Bottle—Racks

Check Room

See Check Room Equipment

Gymnasium

See Lockers—Steel

Racks—Cont.

Hat and Coat

Maforco	22/23
Market Forge Co.	22/23
Peterson	23/53
Sani-Robe	6/26
Vogel Peterson Co., Inc.	23/53

Mortuary

See Mortuary—Racks

Refrigerator or Cold Storage

See Refrigerator—Shelving

Rug—Cold Storage

Maforco	22/23
Market Forge Co.	22/23

Theater Booth

See Ticket—Booth and Equipment—Theater

Towel

See Bathroom, Accessories—Towel Bars or Racks, Grab Rails, etc.

Wine

See Wine—Racks

Racks or Reels

Fire Hose

Alenco	23/3
Allen, W. D., Mfg. Co.	23/3
Borves	23/3
Elkhart Brass Mfg. Co.	23/4

Radiator

Covers and Cabinets

Ferro-Co Corp.	26/72
Quaker City Metal Products Corp.	26/73
See also	6/3

Grilles

See Grilles and Screens; Radiator—Covers and Cabinets

Hangers

E-Z	26/75
Healy-Ruff Co.	26/75
See also	26/72
Specifications	26/75

Metering Orifices

Webster, Warren, & Co.	26/84
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Shields

See Radiator—Covers and Cabinets

Tops—Art Marble

See Art—Marble

Traps

See Traps—Radiator

Valves

See Valves—Radiator

Radiators

Brass or Copper—Steam or Hot Water

Chase Brass & Copper Co., Inc.	26/68
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Cabinet—Steam or Hot Water

Chase Brass & Copper Co., Inc.	26/68
Streamaire	26/70
Webster, Warren, & Co.	26/84
Young Radiator Co.	26/70

Cast Iron—Steam or Hot Water

Burnham Boiler Corp.	26/24
Columbia Radiator Co.	26/25
Crane Co.	26/26
Fero	26/24
McKeesport	26/25
See also	26/33

Concealed—Steam or Hot Water

Chase Brass & Copper Co., Inc.	26/68
Crane Co.	26/26
Dunham, C. A., Co.	26/78
Streamaire	26/70
Webster, Warren, & Co.	26/84
Young Radiator Co.	26/70

Radiators—Cont.

Convactor Type

Chase Brass & Copper Co., Inc.	26/68
Streamaire	26/70
Webster, Warren, & Co.	26/84
Young Radiator Co.	26/70
See also	26/26

Electric

See Heaters—Air—Electric

Humidifying

See Humidifying—Systems

Radio

Caps—Outlet

Bryant Electric Co.	27/7
I-L	27/7
P&S-Despard	27/10
Pass & Seymour, Inc.	27/10

Frequency Distribution Systems

Electro-Acoustic Products Co.	29/17
Graybar Electric Co., Inc.	27/5
RCA Victor	29/18
Western Electric Co.	29/19

Masts

See Flag Poles; Structural—Steel Fabricators and Designers

Metal Box Divider Outlet

Bryant Electric Co.	27/7
I-L	27/7
P&S-Despard	27/10
Pass & Seymour, Inc.	27/10

Outlets for Antenna, Ground, etc.

Bryant Electric Co.	27/7
I-L	27/7
P&S-Despard	27/10
Pass & Seymour, Inc.	27/10
Yaxley Mfg. Div. of P. R. Mallory & Co., Inc.	29/20

Public Address Combinations

RCA Victor	29/18
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Receivers

See Program Distribution—Systems

Sets

See also	27/5
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Wiring Devices

Bryant Electric Co.	27/7
I-L	27/7
Yaxley Mfg. Div. of P. R. Mallory & Co., Inc.	29/20

Radium

Protective Materials

Ray Proof Corp.	13/47
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Raggle

Blocks

Asbestile	8/7
Barrett Co.	8/3
Carey, Philip, Co.	8/5
Elastite	8/5
J-M	8/7
Johns-Manville	8/7
Weatherproof Flashing Co.	8/53
Wee-per	8/53
Specifications	8/3; 8/7; 8/53

Railings

Balcony, etc.

See Fencing—Iron; Ornamental—Metal Work; Railings—Metal

Metal

(See also Fencing—Iron; Ornamental—Metal Work)	
Atlantic Steel Co.	7/12
Bohnalite	7/6
Cincinnati Iron Fence Co., Inc.	23/46
Dixisteel	7/12
Garcy	7/15
Kawneer Co.	11/10
Logan Co.	7/18
Metalcrafts	7/21

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Railings—Cont.

Metal—Cont.

(Continued from Previous Column)

Penn Brass & Bronze Works	7/22
Seely	23/50
Smyser-Royer Co.	7/23; 28/1
Snead & Co.	20/8
Stewart Iron Works Co., Inc.	23/50
Vulcan Rail & Construction Co.	6/23
See also	7/14; 7/15; 7/16; 7/20; 7/26; 8/45; 21/2; 21/4; 23/11; 23/45

Metal Panel

See Partitions—Metal

Pipe

Logan Co.	7/18
Vulcan Rail & Construction Co.	6/23
See also	7/22

Pipe—Fittings for

Vulcan Rail & Construction Co.	6/23
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Steel Panel

See Partitions

Wire

See Partitions—Open Mesh

Wood

(See also Millwork)

See	20/10
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Wood Panel

See Partitions

Rails

Altar

See Railings—Metal

Chair—Metal, Fiber or Rubber

(See also Trim)

Coste, Paul, Inc.	15/37
Knapp Bros. Mfg. Co.	14/6
Milcor Steel Co.	14/7
Nu-Wood	13/26
Royalite	15/37
Wood Conversion Co.	13/26
Specifications	13/26

Display—School

Beckley-Cardy Co.	21/19
Knapp Bros. Mfg. Co.	14/6
Peerless	21/19
Rowles, E. W. A., Co.	21/23

Hand—Covered

Kamrass, H., & Son, Inc.	21/27
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Hand—Metal

Atlantic Steel Co.	7/12
Dixisteel	7/12

Hand—Rope

Kamrass, H., & Son, Inc.	21/27
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Stair

See Railings—Metal

Railways

Incline

Otis Elevator Co.	30/8
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Range

Boilers

Aquatherm	24/36
Case, W. A., & Son Mfg. Co.	25/8
Dahlquist Mfg. Co.	24/36
Eastern	25/8
G & C	24/38
Gerstein & Cooper Co.	24/38
Herculoy	24/43
International Nickel Co., Inc.	24/39
Monel Metal	24/39
Revere Copper and Brass Inc.	24/43
Turbo	24/36
Whitehead	24/39

Ranges

Baking

See Ovens—Baking

Ranges—Cont.

Electric

<i>Companion</i>	22/27
Edison General Electric Appliance Co., Inc.	22/20
<i>Empress</i>	22/27
<i>G-E</i>	22/20; 22/27
General Electric Co.	22/27
<i>Hostess</i>	22/27
<i>Hotpoint</i>	22/20
<i>Imperial</i>	22/27
Kelvinator Corp.	22/29
<i>Kitchenette</i>	22/27
<i>Lenox</i>	22/27
Westinghouse Electric & Mfg. Co.	22/15
See also	27/5

French—Electric, Coal or Gas

Edison General Electric Appliance Co., Inc.	22/20
<i>G-E</i>	22/20
See also	22/21

Gas or Electric—Kitchen Cabinet Combination

Acme Metal Products Corp.	22/1
Dieterich Steel Cabinet Corp.	22/6
Elgin Stove & Oven Co.	22/7
<i>G-E</i>	22/27
General Electric Co.	22/27
Murphy Door Bed Co.	22/11
Parsons Co.	22/12
<i>Pureaire</i>	22/12
Westinghouse Electric & Mfg. Co.	22/15
White Door Bed Co., Inc.	22/14
Specifications	22/14

Receivers

Condensation—Alternating

See Traps—Return Steam

Condensation and Air Pumps

See Pumps and Receivers—Condensation

Garbage—Built-in

St. Charles Mfg. Co.	22/13
See	6/3

Garbage—Underground

Donley Brothers Co.	26/104
See also	6/3; 26/106

Milk Bottle and Package

Donley Brothers Co.	26/104
Majestic Co.	6/3
Milcor Steel Co.	25/27
See also	26/64

Receptacles—Electric

Brackets and Ceiling Fixtures

See Lighting Fixtures—Electric

Convenience Outlets

Bryant Electric Co.	27/7
<i>G-E</i>	27/8
General Electric Co.	27/8
<i>I-L</i>	27/7
<i>P & S</i>	27/10
<i>P&S-Despard</i>	27/10
Pass & Seymour, Inc.	27/10
Specifications	27/8

Convenience Outlets and Switch Combined

Bryant Electric Co.	27/7
<i>G-E</i>	27/8
General Electric Co.	27/8
<i>I-L</i>	27/7
<i>P&S-Despard</i>	27/10
Pass & Seymour, Inc.	27/10

Outlet Box

Bryant Electric Co.	27/7
<i>G-E</i>	27/8
General Electric Co.	27/8
<i>I-L</i>	27/7
Kliegl Bros.	28/18
<i>P&S-Despard</i>	27/10
Pass & Seymour, Inc.	27/10

Plug and Fan Hanger—Combination

See Boxes—Outlet, etc.

Receptacles—Electric—Cont.

Plug, Pilot Lamp, Night Light, etc.

Bryant Electric Co.	27/7
<i>I-L</i>	27/7
<i>P&S-Despard</i>	27/10
Pass & Seymour, Inc.	27/10

Radio Outlet

Bryant Electric Co.	27/7
<i>I-L</i>	27/7
Yaxley Mfg. Div. of P. R. Mallory & Co., Inc.	29/20

Remote Control

<i>G-E</i>	27/8
General Electric Co.	27/8
<i>Step Saver</i>	27/8

Socket

See Sockets—Ceiling

Stage

See Stage—Fittings and Lighting—Electrical

Switch Combination

Bryant Electric Co.	27/7
<i>G-E</i>	27/8
General Electric Co.	27/8
<i>I-L</i>	27/7
<i>P&S-Despard</i>	27/10
Pass & Seymour, Inc.	27/10

Receptors

Shower Bath

<i>De Luxe</i>	25/14
<i>Ferrostone</i>	25/17
Fiat Metal Mfg. Co.	25/14
<i>Foot-Grip</i>	25/18
Lehman Sprayshield Co.	25/16
Milwaukee Stamping Co.	25/17
<i>No-Slip</i>	25/18
Weis, Henry, Mfg. Co., Inc.	25/18
<i>WeiSart</i>	25/18
See also	24/15

Reclaimers

Water Heating

See Heat—Exchangers, Interchangers, Economizers, etc.

Recorders

Job or Elapsed Time

<i>Telechron</i>	29/11
Warren Telechron Co.	29/11

Temperature

See Thermometers—Indicating and Recording

Time—Employees', etc.

<i>Telechron</i>	29/11
Warren Telechron Co.	29/11

Time—Watchman's

<i>ADT</i>	29/1
American Automatic Electric Sales Co.	29/12
American District Telegraph Co.	29/1
<i>Autelco</i>	29/12
Holtzer-Cabot Electric Co.	29/6
<i>P-A-X</i>	29/12
<i>Strowger</i>	29/12
See also	29/5

Red

Lead

See Lead—Red

Reflectors—Lighting

Aisle Lighting—Bookstack

Snead & Co.	21/5
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Aisle Lighting—Theater

Belson Mfg. Co.	28/12
<i>Bel-Sun-Lite</i>	28/12
Day-Brite Reflector Co.	28/15
Kliegl Bros.	28/18
See also	28/13

Reflectors—Lighting—Cont.

Bank Screen, Showcase, Window, Church, Concealed, etc.

Belson Mfg. Co.	28/12
Bel-Sun-Lite	28/12
Bright Light Reflector Co., Inc.	28/11
Celestialite	28/4
Century Lighting Equipment, Inc.	28/13
Curtis Lighting, Inc.	28/14
Day-Brite Reflector Co.	28/15
Garcy Reflectors, Div. of Garden City Plating & Mfg. Co.	28/16
Gleason-Tiebout Glass Co.	28/4
Kliegl Bros.	28/18
Light-Strip	28/14
Silv-A-King	28/11
Speed-Lox	28/11

Cove Lighting

See Reflectors—Lighting—Bank, Screen, Showcase, Window, Church, etc.

Exterior

See Floodlights; Spotlights; Reflectors—Lighting—Metal; Lighting Fixtures—Electric—Exterior, etc.

Floodlighting

Aqualux	28/9
Belson Mfg. Co.	28/12
Bel-Sun-Lite	28/12
Bright Light Reflector Co., Inc.	28/11
Curtis Lighting, Inc.	28/14
G-E	28/17
General Electric Co.	28/17
Graybar Electric Co., Inc.	28/5
Jumbo-Isolux	28/19
Kliegl Bros.	28/18
Silv-A-King	28/11
Westinghouse Electric & Mfg. Co.	28/9
Wheeler Reflector Co.	28/19
X-Ray	28/14
See also	23/27; 28/13

Industrial

Bright Light Reflector Co., Inc.	28/11
Day-Brite Reflector Co.	28/15
Duratach	28/19
Durex	28/19
Glassteel	28/9
Graybar Electric Co., Inc.	28/5
Isolux	28/19
RLM	28/9
R.L.M.	28/19
Silv-A-King	28/11
Super-Lume	28/15
Westinghouse Electric & Mfg. Co.	28/9
Wheeler Reflector Co.	28/19

Metal

Century Lighting Equipment, Inc.	28/13
Curtis Lighting, Inc.	28/14
Day-Brite Reflector Co.	28/15
Duratach	28/19
Durex	28/19
Edge-Ray	28/14
Eye-Comfort	28/14
Garcy Reflectors, Div. of Garden City Plating & Mfg. Co.	28/16
Glassteel	28/19
Isolux	28/19
L'Or-Ray	28/14
RLM	28/9
R.L.M.	28/19
Westinghouse Electric & Mfg. Co.	28/9
Wheeler Reflector Co.	28/19

Plant, Factory, etc.

See Reflectors—Lighting—Industrial

Spotlights

Bright Light Reflector Co., Inc.	28/11
Silv-A-King	28/11

Refractory

Brick, Clay, Cement, etc.

(Including, Brick or Fire Clay; High-alumina Silica; Chrome; Magnesite and other High Temperature Refractories)

Calicel	3/60
Carey, Philip, Co.	13/38

(Continued in Next Column)

Refractory—Cont.

Brick, Clay, Cement, etc.—Cont.

(Continued from Previous Column)

Careycel	13/38
Castic Dry	26/100
Ignisite	26/100
Johns-Manville	13/39
K & M	13/40
Kalolith	26/100
Keasbey & Mattison Co.	3/60
Kellogg, M. W., Co.	26/100
Sayre & Fisher Brick Co.	3/25
Sil-O-Cel	13/39
Sil-O-Cel C-22	13/39
Thermositic	26/100
United States Mineral Wool Co.	13/11
See also	3/42

Refrigerating

Air Conditioning

See Coolers—Unit

Cooler Units

See Coolers—Unit

Machinery and Equipment

(See also Refrigerators)

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp.	26/1
Carrier Engineering Corp.	26/3
Flakice Frozen Water Ribbons	22/32
Freon	26/21
Frigidaire Division, General Motors Corp.	22/26; 26/7
G-E	22/27
General Electric Co.	22/27
I-R	26/11
Ice-O-Matic	22/31
Ingersoll-Rand Co.	26/11
McCray Refrigerator Sales Corp.	22/30
Sirocco	26/1
Uni-Bilt	24/34
Westco Pump Corp.	24/34
Westinghouse Electric & Mfg. Co.	26/18
Williams Oil-O-Matic Heating Corp.	22/31
York Ice Machinery Corp.	22/32; 26/21
Young Radiator Co.	26/70
See also	22/29

Refrigerating Systems

Drinking Water

See Coolers—Drinking Water

Refrigerating and Ventilating

Systems

See Refrigerating—Machinery and Equipment; Blowers; Fans; Ventilating—Systems; Coolers—Unit

Refrigerators

Brine Pumps for

See Specific Type of Pump; Refrigerating—Machinery and Equipment

Electric

De Luxe	22/26
Frigidaire Division, General Motors Corp.	22/26
G-E	22/27
General Electric Co.	22/27
Ice-O-Matic	22/31
Kelvinator Corp.	22/29
Master	22/26
McCray Refrigerator Sales Corp.	22/30
Standard	22/26
Super	22/26
Westinghouse Electric & Mfg. Co.	22/15; 25/7
Williams Oil-O-Matic Heating Corp.	22/31

Florist

G-E	22/27
General Electric Co.	22/27

Front Work for

Jamison Cold Storage Door Co.	22/24
Maforco	22/23
Market Forge Co.	22/23

Ice Cooled

Coolerator Co.	22/25
McCray Refrigerator Sales Corp.	22/30
Specifications	22/25

Refrigerators—Cont.

Insulation for

See Insulation—Cold Storage or Refrigeration

Kitchen Cabinet Combination

Acme Metal Products Corp.	22/1
Dieterich Steel Cabinet Corp.	22/6
Elgin Stove & Oven Co.	22/7
G-E	22/27
General Electric Co.	22/27
Murphy Door Bed Co.	22/11
Parsons Co.	22/12
Pureaire	22/12
White Door Bed Co., Inc.	22/14
Specifications	22/14

Mortuary

G-E	22/27
General Electric Co.	22/27

Shelving for

Maforco	22/23
Market Forge Co.	22/23

Windows for

See	22/24
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X-Ray Developing

G-E	22/27
General Electric Co.	22/27

Register

Faces

See Grilles and Screens

Shields

American Foundry & Furnace Co.	26/45
Knowles Mushroom Ventilator Co.	26/56
Nu-Notch	26/56
Quandri-Flow	26/58
Tri-Flow	26/58
Tu-Way	26/56
Waterloo Register Co.	26/58

Registering

Devices—Turnstiles

See Turnstiles

Registers

Heating, Ventilating or Air Conditioning

See Dampers or Registers; Grilles and Screens

Heating and Ventilating—Louver Type

See Louver—Registers

Metal Frames for

Auer Register Co.	26/47
Waterloo Register Co.	26/58

Revolution or Operation

See Counters—Revolution or Operation

Registers or Dampers

Controlled Intakes or Outlets

See Dampers and/or Registers

Regulators

Air Conditioning

See Air Conditioning

Damper

Barber-Colman Co.	26/76
Effco	9/14
Hirschman, W. F., Co., Inc.	9/14
Johnson Service Co.	26/79
Minneapolis-Honeywell Regulator Co.	26/81
Modutrol	26/81
Powers Regulator Co.	26/82
Sarco Co., Inc.	26/90
Sylphon	26/86
Thrush, H. A., & Co.	26/83
See also	26/53

Feed Water

McDonnell & Miller	26/88
Specifications	26/88

Heat

See Controllers—Temperature; Thermostats

Humidity

See Controllers—Humidity; Humidostats

Regulators—Cont.

Pressure

See Controllers—Pressure—Automatic; Valves—Reducing or Regulating Pressure

Swimming Pool—Sterilization

Chloro	23/33
W & T	23/33
Wallace & Tiernan Co., Inc.	23/33

Temperature

See Controllers—Temperature; Thermostats

Reinforcement

Beam Wrapping—Wire Mesh

Ceco	3/69
Concrete Steel Co.	3/47
Consolidated Expanded Metal Cos.	3/48
J-M	3/49
Johns-Manville	3/49
Ryerson, Joseph T., & Son, Inc.	3/51
Steelcrete	3/48
Truscon Steel Co.	11/12

Concrete

See Concrete—Reinforcement—Bars and Rods; Concrete Reinforcement—Expanded and Perforated Sheet

Reinforcing

Devices

See Concrete—Reinforcing Devices

Relays

Electric

(See also Switches—Electric—Magnetic)

G-E	27/13
General Electric Co.	27/13
Mastercode	29/7
Mercoid Corp.	26/80
Minneapolis-Honeywell Regulator Co.	26/81
Modutrol	26/81
Signal Engineering & Mfg. Co.	29/7
Wheelock	29/7

Remote Control

Apparatus

American Automatic Electric Sales Co.	29/12
Autelco	29/12
Diamond H	27/12
Gamewell Co.	29/5
Duootherm	26/69
Grinnell Co., Inc.	26/69
Hart Mfg. Co.	27/12
Johnson Service Co.	26/79
Minneapolis-Honeywell Regulator Co.	26/81
Modutrol	26/81
Powers Regulator Co.	26/82

Reproducers

Sets

See Program Distribution—Systems

Voice and Music

See Public Address—Systems; Program Distribution—Systems; Radio—Frequency Distribution Systems

Reservoirs

See Tanks

Restaurant and Cafeteria

Equipment

See Furnishings and Equipment—Cafeteria and Restaurant

Restoration and Preservation

Building Exteriors

Allied Pneumatic Services, Inc.	1/2
Billings-Chapin Co.	4/4
Drival	4/4
Nevins, Oscar W., Co., Inc.	4/14
Obelisk Waterproofing Co.	4/15
Specifications	4/4

Rests and Casters

Furniture

See Casters and Rests—Furniture

Revolving

Doors

Atchison Revolving Door Co.	10/26
G.B.C.	10/27
General Bronze Corp.	7/16; 10/27
International Revolving Door Co.	10/28
Van Kannel Revolving Door Co.	10/29
Specifications	10/26; 10/27; 10/28; 10/29

Rheostats

Electric

See	29/20
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Ridge Rolls or Strips

Metal

Armco	8/40
Gohi	8/47
Newport Rolling Mill Co., Inc.	8/47
Republic Steel Corp.	7/10
Toncan	7/10
See also	8/45; 14/13

Prepared or Ready—Plain or Surfaced

See Roofing—Roll—Prepared or Ready—Plain or Surfaced	
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Rings

Curtain—Bedside, Hospital, Screening, Shower

See Curtain—Hooks	
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Pipe

Grinnell Co., Inc.	26/93
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Riprap

Granite

See Granite	
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Road Strip

Metal

See	3/51
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Robe

Hooks

See Bathroom Accessories	
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Rock

Wool

See Wool—Mineral or Rock; Insulation	
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Rods

Lightning

American Chimney Corp.	26/98
Boston Lightning Rod Co.	27/17
Burkett Lightning Rod Co.	27/18
Electra	27/20
Jones, Harold K., Co.	27/19
Kellogg, M. W., Co.	26/100
West Dodd Lightning Conductor Corp.	27/20
See also	10/11
Specifications	27/18

Rods and Bars

Brass, Bronze, Copper or Nickel Silver

American Brass Co.	7/3
Anaconda	7/3
Plumrite	24/2
Revere Copper and Brass Inc.	7/8
Ryerson, Joseph T., & Son, Inc.	3/51

Copper Silicon Alloys

American Brass Co.	7/3
Everdur	7/3

Nickel

International Nickel Co., Inc.	7/7
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Nickel Copper Alloys

Inco	7/7
International Nickel Co., Inc.	7/7
Monel Metal	7/7

Reinforcing—Concrete

See Concrete—Reinforcement—Bars and Rods	
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Stainless Steel

Enduro	7/10
Republic Steel Corp.	7/10

Rods and Bars—Cont.

Steel—Acid Resistant

See	24/14
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Welding

See Welding—Filler Metal	
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Rollers

Awning

See Awning, Rollers for	
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Door

See Sheaves—Sliding Door; Hangers—Door	
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Window Shade

See Shades—Window—Rollers for	
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Rolling

Blinds

See Blinds—Rolling	
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Doors

See Doors—Rolling	
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Partitions

See Partitions—Rolling	
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Pins—Refrigerated

See	22/26
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Window Screens

See Screens—Insect—Rolling	
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Rolls

Pipe

(See also Hangers—Pipe)	
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Grinnell Co., Inc.	26/93
Porter, H. W., & Co., Inc.	26/96
Ric-wil Co.	26/97
See also	26/94

Roof

Awning Sockets

See Awnings—Roof	
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Decks

See Roof Construction	
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Drains

See Drains—Roof	
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Flashing

See Flashings—Sheet Metal	
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Insulation

See Insulation; Roof Construction—Gypsum; Tile—Roofing—Gypsum	
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Leader and Vent Connections

See Vent Connections—Roof	
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Lights

See Lights—Vault and Sidewalk; Skylights—Glass and Concrete Construction	
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Planks—Treated

See Lumber—Creosoted or Treated	
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Repairing Material—Mastic

See Cement—Roofing	
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Snow Guards

See Guards—Snow	
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Strainers

See Strainers—Roof	
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Sumps

See Drains—Roof	
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Tile

See Tile—Roofing	
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Trusses

See Trusses	
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Ventilators

See Ventilators—Roof	
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Roof Construction

Cast Iron Plates

See Roofing—Cast Iron Plates	
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Concrete Reinforced and Slag Concrete Block

Republic Fireproofing Co., Inc.	3/71
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Roof Construction—Cont.

Expansion Joints for

See Joints—Expansion—Concrete

Glass and Concrete

See Skylights—Glass and Concrete Construction

Gypsum

<i>Econo</i>	3/68
<i>Econo Decking</i>	3/68
<i>Gypsteel Gypsum Plank</i>	3/67
<i>Hoge</i>	3/65
<i>Lathrop-Hoge Gypsum Construction Co.</i>	3/65
<i>Marks T.</i>	3/68
<i>National Gypsum Co.</i>	3/66
<i>Pyrobar</i>	3/68
<i>Pyrofill</i>	3/68
<i>Red Top</i>	3/68
<i>Red Top Rib</i>	3/68
<i>Sheetrock-Pyrofill</i>	3/68; 8/10
<i>Structural Gypsum Division; American Cyana-</i> <i>mid & Chemical Corp.</i>	3/67
<i>USG</i>	3/68; 8/10
<i>United States Gypsum Co.</i>	3/68; 8/10
<i>Weatherwood-Pyrofill</i>	3/68
<i>Specifications</i>	3/68; 8/10

Lightweight Slab

(See also Slabs; Insulation—Precast)

<i>Aerocrete Corp. of America</i>	3/58
<i>Federal-American Cement Tile Co.</i>	3/59
<i>Hoge</i>	3/65
<i>Lathrop-Hoge Gypsum Construction Co.</i>	3/65
<i>National Gypsum Co.</i>	3/66
<i>Porete Mfg. Co.</i>	3/62
<i>RS</i>	3/58
<i>Rackle, Geo., & Sons Co.</i>	3/63
<i>Thermax Div., Northwest Magnesite Co.</i>	13/24
<i>Truscon Steel Co.</i>	3/64
<i>Specifications</i>	3/59; 3/63; 13/24

Metal Sheet—Insulated

<i>Detroit Steel Products Co.</i>	3/73
<i>Fenestra-Holorib</i>	3/73
<i>Ferrobord</i>	11/12
<i>Ferrocoustic</i>	11/12
<i>Ferrodeck</i>	11/12
<i>Ferroplate</i>	11/12
<i>Holorib</i>	3/73; 13/31
<i>Insulated-Sanacoustic-Holorib</i>	8/7
<i>J-M</i>	8/7; 13/31
<i>Johns-Manville</i>	8/7; 13/31
<i>La-Ho-Co</i>	3/65
<i>Lathrop-Hoge Gypsum Construction Co.</i>	3/65
<i>Mahon, R. C., Co.</i>	3/74; 13/33
<i>Milcor Steel Co.</i>	3/75; 14/7
<i>Porete Mfg. Co.</i>	3/62
<i>RPM</i>	8/38
<i>Robertson, H. H., Co.</i>	8/38
<i>Sanacoustic</i>	3/73; 13/31
<i>Truscon Steel Co.</i>	11/12
<i>USG</i>	3/68
<i>United States Gypsum Co.</i>	3/68
<i>Universal Metal Sections Co.</i>	3/76
<i>Specifications</i>	3/73; 8/7

Outlets for

<i>Harrington, L. W.</i>	24/25
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Precast Tile

See Slabs—Gypsum

Steel Truss and Joist

<i>Kalman Steel Corp.</i>	5/7
<i>Longspan</i>	5/7
<i>MacMar</i>	5/7
<i>RPM</i>	3/70
<i>Robertson, H. H., Co.</i>	3/70
<i>Universal Metal Sections Co.</i>	3/76

Sub—Nailing Concrete

See Nailing Concrete

Transparent or Daylight

See Skylights—Glass and Concrete Construction

Trusses for

See Trusses

Trussless (Patented)

<i>Arch Roof Construction Co., Inc.</i>	8/62
<i>Lamella Roof Syndicate, Inc.</i>	8/63

Roofing

Asbestos—Cement—Plain or Corrugated

(See also Insulation; Roofing—Built-up; Shingles—Asbestos)

<i>Genasco</i>	8/2
<i>Barber Asphalt Co.</i>	8/2
<i>J-M</i>	8/7; 8/37
<i>Johns-Manville</i>	8/7; 8/37
<i>Transite</i>	8/7; 8/37
<i>Specifications</i>	8/7; 8/37

Asphalt

See Roofing—Built-up; Shingles—Asphalt, Asbestos;
Blocks—Asphalt Flooring

Built-up

<i>American Brass Co.</i>	8/1
<i>Anaconda</i>	8/1
<i>Barber Asphalt Co.</i>	8/2
<i>Barrett Co.</i>	8/3
<i>Bird & Son, Inc.</i>	8/4
<i>Carey, Philip, Co.</i>	8/5
<i>Certain-teed Products Corp.</i>	8/16
<i>Continental</i>	8/9
<i>Copperclad</i>	8/1
<i>Electro-Sheet</i>	8/1
<i>Eternit</i>	8/9
<i>Flintkote Co.</i>	8/6
<i>Genasco</i>	8/2
<i>J-M</i>	8/7
<i>Johns-Manville</i>	8/7
<i>Koppers Products Co.</i>	8/8
<i>Neponset</i>	8/4
<i>Pabco</i>	15/46
<i>Roofinsul</i>	8/7
<i>Ru-ber-oid</i>	8/9
<i>Ruberoid Co.</i>	8/9; 8/18
<i>Safepack</i>	8/9
<i>Sel-Vi-Lap</i>	8/10
<i>Standard Trinidad</i>	8/2
<i>USG</i>	8/10; 8/19
<i>United States Gypsum Co.</i>	8/10; 8/19
<i>Viskalt</i>	8/6
<i>Watson</i>	8/9
<i>Specifications</i>	8/3; 8/4; 8/5; 8/6; 8/7; 8/8; 8/9; 8/10; 8/16

Canvas

<i>Barco-Dex</i>	8/21
<i>Barnett Canvas Goods & Bag Co., Inc.</i>	8/21
<i>Barrell, William L., Co., Inc.</i>	8/20
<i>Con-Ser-Tex</i>	8/20

Contractors

See Contractors—Roofing; Contractors—Roof Construc-
tion

Copper

<i>American Brass Co.</i>	8/39
<i>Anaconda</i>	8/39
<i>Chase Brass & Copper Co., Inc.</i>	8/45
<i>Leadtex</i>	8/48
<i>Revere Copper and Brass Inc.</i>	8/48
<i>Specifications</i>	8/48

Corrugated—Asbestos—Cement Covered Metal

See Roofing—Asbestos—Cement Plain or Corrugated

Daylight

See Skylights—Glass and Concrete Construction

Felt

See Roofing—Built-up; Roofing—Roll—Prepared or
Ready

Glass

See Glass—Corrugated

Ingot Iron—Corrugated, Roll, Standing Seam and V-Crimp

<i>American Rolling Mill Co.</i>	8/40
<i>American Zinc Institute, Inc.</i>	8/42
<i>Armco</i>	8/40
<i>Seal of Quality</i>	8/42

Iron, Copper, Alloyed, Galvanized—Flat, Corru- gated, Beaded, etc.

<i>Gohi</i>	8/47
<i>Newport Rolling Mill Co., Inc.</i>	8/47
<i>Republic Steel Corp.</i>	7/10
<i>Toncan</i>	7/10

Roofing—Cont.

Metal—Asbestos Covered

RPM	8/38
Robertson, H. H., Co.	8/38

Paper

See Paper—Building; Insulation—Paper Form

Roll—Prepared or Ready—Plain or Surfaced

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Dixie and ParaCo.	8/19
Dixie Talc	8/10
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Genasco	8/2
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Mica-Kote	8/11
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Solka	8/11
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Super Certain-teed	8/16
Surety	8/11
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American Steel & Wire Co.	30/17
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Briar Hill Stone Co..... 3/12

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Bayley, William, Co..... 11/2

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Concrete Engineering Co., Inc..... 3/69

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Vogeliner Co.	15/13
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Burrowes Corp.	19/1
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Cincinnati Fly Screen Co.	19/4
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Ceco	3/69
Chamberlin Metal Weather Strip Co., Inc.	19/2
Concrete Engineering Co., Inc.	3/69
Detroit Steel Products Co.	11/5
Everhard Mfg. Co.	19/5
Fenestra	11/5
Fenmark	11/5
Higgin Mfg. Co.	19/6
Kay Screen	19/5
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Mesker Bros. Iron Co.	11/11
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Consolidated Expanded Metal Cos.	6/27
Cyclone Fence Co.	23/48
Kmpc	6/29
Kentucky Metal Products Co., Inc.	6/29
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 Chamberlin Metal Weatherstrip Co., Inc.19/47
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Albert	19/46
Bancroft, Joseph, & Sons Co.	19/46
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Claysmith	19/46
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Damasko Hevi-Duty	19/30
Diana	19/50
du Pont de Nemours, E. I., & Co., Inc.	16/15; 19/48
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Inter-Twill	19/34
Joanna	19/50
LaSalle	19/51
Lite-Tite	19/51
London	19/46
Niagara	19/30
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Oswego	19/50
Paragon	19/34
Rock-Fast	19/46
Rolltex	19/51
Rowles, E. W. A., Co.	19/51
Shadowless	19/34
Smith's Oil	19/46
Sun-Fast	19/46
Sunlite	19/34
Tint Cloth	19/50
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Columbia Mills, Inc.	19/30
Hartshorn, Stewart, Co.	19/50
Interstate Shade Cloth Co.	19/34
Rolrite	19/34
Specifications	19/50

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Aerolux	19/27
Aeroshade Co.	19/27
Simon Ventiligher Co., Inc.	19/35
Ventiligher	19/35

X-Ray

Chamberlin Metal Weatherstrip Co., Inc.	19/47
Columbia Mills, Inc.	19/30
Lite-Tite	19/51
Mastermade	19/51
Ray Proof Corp.	13/47
Rowles, E. W. A., Co.	19/51
Universal Roller Screen Co.	19/11
Vellmo	19/30

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Blue Jay	8/57
Cabot, Samuel, Inc.	8/55
Edham	8/61
Elhide Co.	8/56
James Lumber Co.	8/57
Manufacturers Reserve Supply, Inc.	8/58
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Easy Set	17/19
Enduro	7/10
Gohi	8/47
Himco	17/17
Himmel Brothers Co.	17/17
Jones, Harold K., Co.	27/19
Kawneer Co.	11/10; 17/18
Logan Co.	7/18
Penn Brass & Bronze Works	7/22
Pittco	17/19
Pittsburgh Plate Glass Co.	17/19
Protex Weatherstrip Mfg. Co.	19/19
Republic Steel Corp.	7/10
Revecon	7/9
Revere Copper and Brass Inc.	7/8; 7/9
Stewart Iron Works Co., Inc.	23/50
Stran-Steel Corp.	5/8
Toledohio	7/24
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Stran-Steel Corp.	5/8
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Alcoa	7/2
Aluminum Co. of America	7/2
American Brake Shoe and Foundry Co.	6/2
American Brass Co.	7/3
Anaconda	7/3
Bethlehem Steel Co.	5/2
CB	2/1; 5/4
Carnegie-Illinois Steel Corp.	2/1; 5/4
Ceco	3/69
Clerespan	11/12
Concrete Steel Co.	3/47
Enduro	7/10
Inco	7/7
International Nickel Co., Inc.	7/7
J & L	5/6; 6/5; 24/9
Jones & Laughlin Steel Corp.	5/6; 6/5
Junior Beam	5/6
Kalman Steel Corp.	5/7
Longspan	5/7
MacMar	5/7
Monel Metal	7/7
Nailer	11/12
O-T	11/12
Republic Steel Corp.	7/10
Truscon Steel Co.	11/12
United States Steel Corp. Subsidiaries	7/11
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Specifications	5/6; 11/12

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Asbestos—Cement

See Insulation—Board Form; Wall—Board

Felt

See Insulation—Blanket or Bat Form

Fiber

See Wall—Boards; Boards—Stucco

Gypsum Board

See Wall—Board—Gypsum

Paper

See Insulation—Paper Form; Paper—Building

Plywood

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Thermax Div., Northwest Magnesite Co.	13/24
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Knap & Vogt Mfg. Co.	18/41
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<i>Alcoa</i>	7/2; 11/1
Aluminum Co. of America	7/2; 11/1

Annealed and Black Sheets—Flat and Corrugated

American Rolling Mill Co.	8/40
American Sheet & Tin Plate Co.	8/41
<i>Armco</i>	8/40
Republic Steel Corp.	7/10
<i>Toncan</i>	7/10
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<i>Plumrite</i>	24/2
Revere Copper and Brass Inc.	7/8; 8/48
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Allegheny Steel Co.	7/1
American Rolling Mill Co.	7/4
<i>Armco</i>	7/4
<i>Enduro</i>	7/10
Lyon, Conklin & Co., Inc.	8/46
<i>Lyonore Metal</i>	8/46
Republic Steel Corp.	7/10
Ryerson, Joseph T., & Son, Inc.	3/51
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Copper—Enameled

Revere Copper and Brass Inc.	8/48
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Copper Silicon Alloys

American Brass Co.	7/3
<i>Everdur</i>	7/3

Corrosion and Rust Resistant

<i>Allegheny-Metal</i>	7/1
Allegheny Steel Co.	7/1
American Sheet & Tin Plate Co.	8/41
<i>Enduro</i>	7/10
<i>Leadtex</i>	8/48
Lyon, Conklin & Co., Inc.	8/46
<i>Lyonore Metal</i>	8/46
Republic Steel Corp.	7/10
Revere Copper and Brass Inc.	8/48
<i>Toncan</i>	7/10
USS	8/41
United States Steel Corp. Subsidiaries.	7/11

Expanded

(See also Metal Lathe—Expanded and Perforated Sheet)

<i>Shelf-X</i>	3/52
United States Gypsum Co.	3/52

Heat Resistant

American Sheet & Tin Plate Co.	8/41
<i>Enduro</i>	7/10
Republic Steel Corp.	7/10
<i>Toncan</i>	7/10
USS	7/11
United States Steel Corp. Subsidiaries.	7/11

Ingot Iron—Galvanized, Blue Annealed—Flat and Corrugated

American Rolling Mill Co.	8/40
American Zinc Institute, Inc.	8/42
<i>Armco</i>	8/40
<i>Paintgrip</i>	8/40
Republic Steel Corp.	7/10
<i>Toncan</i>	7/10
See also	3/51

Iron, Copper Alloyed—Galvanized—Flat, Corrugated, Beaded, etc.

<i>Gohi</i>	8/47
Newport Rolling Mill Co., Inc.	8/47
Republic Steel Corp.	7/10
<i>Toncan</i>	7/10

Sheet Metal—Cont.

Iron—Enameling

American Rolling Mill Co.	8/40
<i>Armco</i>	8/40
Republic Steel Corp.	7/10
<i>Toncan</i>	7/10

Lead Covered

American Brass Co.	8/39
<i>Anaconda</i>	8/39
Chase Brass & Copper Co., Inc.	8/45
<i>Leadtex</i>	8/48
Revere Copper and Brass Inc.	8/48
Specifications	8/48

Nickel

International Nickel Co., Inc.	7/7
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Nickel Copper Alloys

<i>Inco</i>	7/7
International Nickel Co., Inc.	7/7
<i>Monel Metal</i>	7/7

Porcelain Enameled

<i>Macotta</i>	7/19
Maul Macotta Corp.	7/19
Toledo Porcelain Enamel Products Co.	7/24
<i>Toledohio</i>	7/24
See also	21/4

Steel—Acid Resistant

<i>Durimet</i>	24/14
Duriron Co., Inc.	24/14

Steel and Asbestos—Copper Covered

<i>RPM</i>	8/38
Robertson, H. H., Co.	8/38

Steel, Asbestos Covered—Flat, Corrugated, Beaded, etc.

<i>RPM</i>	8/38
Robertson, H. H., Co.	8/38

Steel, Copper Alloyed—Flat, Corrugated, Beaded, etc.

American Rolling Mill Co.	8/40
American Sheet & Tin Plate Co.	8/41
<i>Armco</i>	8/40
<i>Beth-Cu-Loy</i>	8/44
Bethlehem Steel Co.	8/44
<i>Cop-R-Loy</i>	14/13; 24/12
<i>Keystone</i>	8/41
<i>Paintgrip</i>	8/40
Wheeling Steel Corp.	14/13; 24/12
Specifications	8/44

Steel—Enameling

American Sheet & Tin Plate Co.	8/41
USS	8/41

Steel—Fabric Surfaced

<i>RPM</i>	8/38
Robertson, H. H., Co.	8/38

Steel—Galvanized or Black—Flat, Corrugated, Beaded, etc.

American Sheet & Tin Plate Co.	8/41
American Zinc Institute, Inc.	8/42
<i>Apollo Best Bloom</i>	8/41
<i>Apollo-Keystone</i>	8/41
<i>Beth-Cu-Loy</i>	8/44
Bethlehem Steel Co.	8/44
Lyon, Conklin & Co., Inc.	8/46
<i>Lyonore Metal</i>	8/46
See also	24/12
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Steel—Sound Deadened

<i>RPM</i>	8/38
Robertson, H. H., Co.	8/38

Tin and Terne Plate

American Sheet & Tin Plate Co.	8/41
See also	24/12
<i>Cop-R-Loy</i>	14/13
Lyon, Conklin & Co., Inc.	8/46
<i>Lyonore Metal</i>	8/46
Wheeling Corrugating Co.	14/13

Sheet Metal Work

Work—General

<i>B.B.</i>	8/43
<i>Cheney Co.</i>	8/50
<i>Lyonore Metal</i>	8/46
<i>Mitco</i>	6/16
<i>Toledohio</i>	7/24
<i>RPM</i>	9/19
See also	9/7; 9/19

Sheets

Aluminum Foil

<i>Alfol Insulation Co., Inc.</i>	13/2
<i>Metallation</i>	13/12
<i>Reynolds Corp.</i>	13/12

Enameling

See Sheet Metal

Metal—Aluminum

<i>Alfol Insulation Co., Inc.</i>	13/2
<i>Metallation</i>	13/12
<i>Reynolds Corp.</i>	13/12

Metal Foil for Insulation

See Insulation—Aluminum Foil Covered

Phenolic Fiber

See Panels—Phenolic Fiber

Metal—Porcelain Enameled

<i>Macotta</i>	7/19
<i>Maul Macotta Corp.</i>	7/19
<i>Toledo Porcelain Enamel Products Co.</i>	7/24
<i>Toledohio</i>	7/24
See also	21/4

Shellac and Shellac Substitutes

<i>Marvelac</i>	16/29
<i>Pittsburgh Plate Glass Co.</i>	17/1
<i>Sherwin-Williams Co.</i>	16/29
Specifications	16/29

Shelving

Adjustable—Hardware for

<i>Garcy</i>	7/15
<i>Garden City Plating & Mfg. Co.</i>	7/15
<i>K-Veniences</i>	18/41
<i>Knap & Vogt Mfg. Co.</i>	18/41
<i>Lyon Metal Products, Inc.</i>	21/12

Glass

See 17/2

Refrigerator or Cold Storage

See Refrigerator—Shelving

Steel

<i>A-S-E</i>	21/7
<i>All-Steel-Equip Co., Inc.</i>	21/7
<i>Art Metal Construction Co.</i>	23/16
<i>Berloy</i>	21/9
<i>Berger Mfg. Co., Div. of Republic Steel Corp.</i>	21/9
<i>GF</i>	21/1; 23/17; 23/18
<i>General Fireproofing Co.</i>	21/1; 23/17
<i>Lyon Metal Products, Inc.</i>	21/12
<i>Maforco</i>	22/23
<i>Market Forge Co.</i>	22/23
<i>Medart, Fred, Mfg. Co.</i>	21/14
<i>Snead & Co.</i>	21/5
<i>Toledohio</i>	7/24
<i>Watson Mfg. Co., Inc.</i>	19/12
See also	6/19; 21/4; 22/6; 23/7

Steel—Library

See Shelving—Steel; Book—Stacks

Steel—Roller

See 21/2

Shields

Bathtub—for Showers

<i>American Steel Furniture Co.</i>	20/12
<i>Fiat Metal Mfg. Co.</i>	25/14
<i>Gem</i>	25/16
<i>Ketcham, G. M., Mfg. Corp.</i>	25/15
<i>Lehman Sprayshield Co.</i>	25/16
<i>Mermaid</i>	25/16
<i>Swan</i>	25/16
<i>Viking</i>	25/16
See also	23/11

Shields—Cont.

Expansion

See Bolts—Expansion; Anchors—Screw—Concrete, Plaster; Plugs—Wall—Metal

Radiator

See Radiator—Covers

Shingle Stains

See Stains—Shingle

Shingles

Asbestos-Cement

<i>Ambler</i>	8/15
<i>Broadsiding</i>	8/15
<i>Carey, Philip, Co.</i>	8/11
<i>Careystone</i>	8/11
<i>Cedargrain</i>	8/12
<i>Century</i>	8/15
<i>English Thatch</i>	8/15
<i>Eternit</i>	8/14
<i>Eternit Timberex</i>	8/14
<i>K&M</i>	8/15
<i>Keasbey & Mattison Co.</i>	8/15
<i>J-M</i>	8/12
<i>Johns-Manville</i>	8/12
<i>Lindenwald</i>	8/15
<i>Mohawk Asbestos Shingles, Inc.</i>	8/13
<i>Mohawkstonne</i>	8/13
<i>Old Colony</i>	8/15
<i>Ruberoid Co.</i>	8/14
<i>Rustic</i>	8/13
<i>Salem</i>	8/12
<i>Stonnetexture</i>	8/13
<i>Timbertex</i>	8/14
<i>Wide-Space-Siding</i>	8/15
<i>Yorktown</i>	8/15
Specifications	8/12

Asphalt—Plain or Mineral Surfaced—Individual or Strip

<i>Arro-Lock</i>	8/10; 8/19
<i>Asfaltslate</i>	8/11
<i>Barb-Lock</i>	8/2
<i>Beaver</i>	8/16
<i>Bird & Son, inc.</i>	8/17
<i>Brick-Like</i>	8/2
<i>Bric-Side</i>	8/12
<i>Bullseye</i>	8/11
<i>Carey, Philip, Co.</i>	8/11
<i>Carey-Lok</i>	8/11
<i>Careypoint</i>	8/11
<i>Certain-teed Products Corp.</i>	8/16
<i>Color-Age</i>	8/11
<i>Doubl-Dip Tru-Brick</i>	8/2
<i>Fiberock</i>	8/11
<i>Flintkote Co.</i>	8/6
<i>Flintlock</i>	8/6
<i>4-in-1</i>	8/10
<i>4-Point</i>	8/2
<i>Genasco</i>	8/2
<i>Giant</i>	8/17; 8/19
<i>Grip-Lock</i>	8/10; 8/19
<i>Hexagonal</i>	8/18
<i>Hextab</i>	8/2
<i>J-M</i>	8/12
<i>Johns-Manville</i>	8/12
<i>Jumbo</i>	8/16
<i>Lastile</i>	8/11
<i>Latite</i>	8/2
<i>Mas-Tab</i>	8/2
<i>Mica-Kote</i>	8/11
<i>Neponset</i>	8/4; 8/17
<i>Pabco</i>	15/46
<i>Philco</i>	8/11
<i>Quad</i>	8/10; 8/19
<i>Rextab</i>	8/6
<i>Ruberoid Co.</i>	8/18
<i>Seal-Tab</i>	8/16
<i>Setab</i>	8/6
<i>Simplex</i>	8/11
<i>Solka</i>	8/11
<i>Speedlay</i>	8/16
<i>Square-tabs</i>	8/18
<i>Supertab</i>	8/18
<i>Super-Tite</i>	8/10; 8/19

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Asphalt—Plain or Mineral Surfaced—Individual or Strip—Cont.

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<i>Surety</i>	8/11
<i>Thatch</i>	8/10; 8/19
<i>Thikbut</i>	8/6
<i>3-in-1</i>	8/10
<i>Tritabs</i>	8/10; 8/19
<i>USG</i>	8/10; 8/19
<i>United States Gypsum Co.</i>	8/19
<i>Vulcanite</i>	8/16
<i>Weatherlok</i>	8/12
<i>Specifications</i>	8/12

Cement

<i>Federal-American Cement Tile Co.</i>	3/59
<i>Porete Mfg. Co.</i>	3/62
<i>Truscon Steel Co.</i>	3/64
<i>Specifications</i>	3/59

Metal

<i>Gohi</i>	8/47
<i>Kenmar</i>	8/36
<i>Milcor Steel Co.</i>	14/14
<i>New Haven Copper Co.</i>	8/36
<i>Titelock</i>	14/14
<i>Wheeling Corrugating Co.</i>	14/13

Shakes

<i>Blue Jay</i>	8/57
<i>Cabot, Samuel, Inc.</i>	8/55
<i>Edham</i>	8/61
<i>Elhide Co.</i>	8/56
<i>James Lumber Co.</i>	8/57
<i>Manufacturers Reserve Supply, Inc.</i>	8/58
<i>Old Colony</i>	8/60
<i>Taper-Tipt</i>	8/58
<i>Weatherbest Corp.</i>	8/60
<i>Weyerhaeuser Sales Co.</i>	8/61
<i>Specifications</i>	8/57; 8/60

Slate

<i>Allenstone</i>	8/27
<i>Buckingham-Virginia Slate Corp.</i>	8/22
<i>Matot, H. A.</i>	8/23
<i>Monson Main</i>	8/25
<i>O'Brien Brothers Slate Co., Inc.</i>	8/24
<i>Penn-Mont</i>	15/8
<i>Rising & Nelson Slate Co.</i>	8/25
<i>Sheldon Slate Products Co., Inc.</i>	8/26
<i>Structural Slate Co.</i>	15/8
<i>Textstone</i>	8/24
<i>Tudor Stone</i>	8/25
<i>Vermont Structural Slate Co.</i>	8/27
<i>See also</i>	8/56; 23/41
<i>Specifications</i>	8/23

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Wood—Hand Split

(See also Shakes)

<i>Blue Jay</i>	8/57
<i>Cabot, Samuel, Inc.</i>	8/55
<i>Elhide Co.</i>	8/56
<i>James Lumber Co.</i>	8/57
<i>Manufacturers Reserve Supply, Inc.</i>	8/58
<i>Old Colony</i>	8/60
<i>Taper-Tipt</i>	8/58
<i>Weatherbest Corp.</i>	8/60
<i>Specifications</i>	8/57; 8/60

Wood—Sawed—Natural or Colored

<i>Cabot, Samuel, Inc.</i>	8/55
<i>Doubl-Thik</i>	8/60
<i>Edham</i>	8/61
<i>Red Cedar Shingle Bureau</i>	8/59
<i>Weatherbest Corp.</i>	8/60
<i>Weyerhaeuser Sales Co.</i>	8/61
<i>See also</i>	8/57
<i>Specifications</i>	8/60

Shock Absorbers

Waterhammer

<i>Josam Mfg. Co.</i>	24/27
<i>Josam-Marsh</i>	24/27

Shoe

Racks and Cabinets

(See also Closet—Racks and Equipment)

<i>Knap & Vogt Mfg. Co.</i>	18/41
<i>K-Veniences</i>	18/41

Shoes

Baseboard—Round Corners for

<i>Overhead Door Co. of Southern California</i>	15/64
<i>Specifications</i>	15/64

Ladder

See Ladder Shoes

Leader

<i>Canton Foundry & Machine Co.</i>	6/1
<i>Gohi</i>	8/47
<i>Universal</i>	6/1
<i>See also</i>	8/45
<i>Specifications</i>	6/1

Shower Bath

Compartments

See Stalls—Shower Bath

Doors

See Doors—Shower Stall—Glass

Drains

See Drains—Floor, Yard, etc.; Drains—Double Drainage

Fixtures

See Baths—Shower or Needle

Mixers

See Mixers—Shower Bath

Partitions

See Partitions—Toilet, Shower or Urinal

Receptors

See Receptors—Shower Bath

Shields

See Shields—Bathtub—for Showers

Stalls

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Dressing Room Combination

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Holders

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Shutters

Automatic Sliding Pole

<i>McIntire, F. N., Brass Works</i>	23/11
<i>Specifications</i>	23/11

Fan—Ventilating or Exhaust

(See also Lowers; Ventilators)

<i>Emerson Electric Mfg. Co.</i>	26/63
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Lightproof

See Curtains—Lightproof

Metal Covered

See Doors—Metal Covered

Rolling

See Doors—Rolling

Sheet Steel

See Doors—Sheet Steel

Steel or Iron

See Doors—Sheet Steel; Doors—Rolling—Steel

Tin Clad

See Doors—Tin Clad

Wood

See Blinds—Wood—Outside

Siamese

Hose Connections

(See also Hydrants)

Allen, W. D., Mfg. Co. 23/3
Elkhart Brass Mfg. Co. 23/4

Sidewalk

Doors

See Doors—Sidewalk—Vault Light

Gratings

See Gratings—Sidewalk, Area, etc.

Lights

See Lights—Vault and Sidewalk

Sidewalls

Glass

See Glass—Corrugated Wire

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Asbestos

See Insulation—Board Form; Wall Board—Asbestos-Cement; Shingles—Asbestos-Cement

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Arro-Lock 8/10; 8/19
Asfaltslate 8/11
Barb-Lock 8/2
Beaver 8/16
Bird & Son, Inc. 8/17
Brick-Like 8/2
Bric-Side 8/12
Bullseye 8/11
Carey-Lok 8/11
Carey, Philip, Co. 8/11
Careypoint 8/11
Certain-teed Products Corp. 8/16
Color-Age 8/11
Double-Dip Tru-Brick 8/2
Fiberock 8/11
Flintkote Co. 8/6
Flintlock 8/6
4-in-1 8/10
4-Point 8/2
Genasco 8/2
Giant 8/17; 8/19
Grip-Lock 8/10; 8/19
Hexagonal 8/18
Hextab 8/2
J-M 8/12
Johns-Manville 8/12
Jumbo 8/16
Lastile 8/11
Latite 8/2
Mas-Tab 8/2
Mica-Kote 8/11
Neponset 8/4; 8/17
Pabco 15/46
Philco 8/11
Quad 8/10; 8/19
Rextab 8/6
Ruberoid Co. 8/18
Seal-Tab 8/16
Setab 8/6
Simplex 8/11
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Speedlay 8/16
Square-tabs 8/18
Supertab 8/18
Super-Tite 8/10; 8/19
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3-in-1 8/10
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See Sheet Metal—Steel—Fabric Surfaced

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Cabot, Samuel, Inc. 8/55
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Edham
Red Cedar Shingle Bureau 8/59
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(Including Annunciators)

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Edwards and Co., Inc. 29/3
ES 30/13
Elevator Supplies Co., Inc. 30/13
Fadelite 30/13
Faraday 29/8
FlashR-Way 30/15
Locdrop 30/13
Otis Elevator Co. 30/8
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American District Telegraph Co. 29/1
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Holtzer-Cabot Electric Co. 29/6
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American Automatic Electric Sales Co. 29/12
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Connecticut Telephone & Electric Corp. 29/4
Dictograph Products Co., Inc. 29/14
Holtzer-Cabot Electric Co. 29/6
North Electric Mfg. Co. 29/16
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Illuminated—Electric—Interior or Exterior

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Bel-Sun-Lite 28/12
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Jones, Trevor F., & Co. 7/27a
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Inlaid Vitreous Enamel

Jones, Trevor F., & Co. 7/27a

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See Ornamental—Metal Work; Tablets; Letters—Metal

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See Letters—Metal

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Elkay Mfg. Co. 25/13
International Nickel Co., Inc. 22/16; 25/24
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Duriron Co., Inc. 24/14

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Acme Metal Products Corp. 22/1
Art Metal Construction Co. 22/3; 23/16
Coppes Bros. & Zook, Inc. 22/4
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Duriron Co., Inc. 24/14
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Linoleum—Composition

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Nickel Copper Alloy

Elkay Mfg. Co. 25/13
Sturdibilt 25/13

Porcelain—Kitchen, Pantry, Slop, etc.

Compeer 25/1
Corwith 25/1
Crane Co. 25/1
Ebco Mfg. Co. 25/23
Sunnyside 25/1
Tracy Mfg. Co. 22/17
Vitro Sheen 22/17
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Sheet Metal—Kitchen, Scullery, etc.

Elkay Mfg. Co. 25/13
Silvi Sheen 22/17
Sturdibilt 25/13
Tracy Mfg. Co. 22/17

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Elkay Mfg. Co. 25/13
Maforco 22/23
Market Forge Co. 22/23
Silvi Sheen 22/17
Sturdibilt 25/13
Tracy Mfg. Co. 22/17

Tops for

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Vitreous China

Ebco Mfg. Co. 25/23
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Boston Varnish Co.....	16/7
Craftexsize	16/11
Craftexize	16/11
Du-Krome	16/15
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du Pont de Nemours, E. I., & Co., Inc.....	16/15
Kling-Ko-Na	15/49
Liquid Velvet Primer.....	16/27
Murlox	16/23
Murphy Varnish Co.....	16/23
O'Brien Varnish Co.....	16/27
Olo	16/28
Olo-Seal	16/28
Passonno-Hutcheon Co.....	16/28
Pittsburgh Plate Glass Co.....	17/1
S.S. Wall Coater.....	16/23
Seal Rite Surfacers.....	16/7
Textone	16/32
Truscon Laboratories	16/30
Tru-Seal	16/30
USG	16/32
U. S. Gutta Percha Paint Co.....	16/31
United States Gypsum Co.....	16/32
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Wiggin's, H. B., Sons Co.....	15/49
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Hoists

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Curbs—Steel

Hirschman, W. F., Co., Inc.....	9/14
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(See also Greenhouses and Conservatories)

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Milcor Steel Co.....	9/4
Vent-O-Lite Co.	9/8
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Contractors for

Richards, J. Merrill.....	9/26
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CWG	9/5
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Clad-Crete	9/23
Federal-American Cement Tile Co.....	3/59
Grauer, Albert, & Co.....	9/24
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Richards, J. Merrill.....	9/26
Richards & Kelly Mfg. Co.....	9/25
3 Way Daylight Roofing.....	9/23
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Anti-Pluvius	9/2
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Drouvé, G., Co.....	9/2
Drou-Ve-Lite	9/2
Duratite	9/7
Effico	9/14
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Hirschman, W. F., Co., Inc.....	9/14
Milcor Steel Co.....	9/4
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Robertson, H. H., Co.....	9/6
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Concrete Engineering Co., Inc.....	3/69
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Detroit Steel Products Co.....	11/5
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Gibson & Kirk Co.....	18/40
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American 3 Way-Luxfer Prism Co.....	9/1
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Milcor Steel Co.....	9/4
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Rackle, Geo., & Sons Co.....	3/63
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Federal-American Cement Tile Co.....	3/59
Porete Mfg. Co.....	3/62
Poretherm	3/62
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Thermax Div., Northwest Magnesite Co.....	13/24

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Nailing Concrete

See Nailing Concrete

Partition—Light Weight Concrete

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Precast—Concrete

See Tile—Roofing—Reinforced Cement

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Gold Bond	14/8
Gypsteel	3/67
Gypsteel Gypsum Plank	3/67
Hoge	3/65
Lathrop-Hoge Gypsum Construction Co.....	3/65
National Gypsum Co.....	3/66; 14/8
Pyrobar	3/68; 8/10
Structural Gypsum Division, American Cyanamid & Chemical Corp.....	3/67
USG	3/68; 8/10
United States Gypsum Co.....	3/68; 8/10
Specifications	3/68; 8/10

Reinforced Cement or Concrete Tile

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See Soapstone

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Corning Glass Works	3/28; 17/10
Corning-Steuben	17/10
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Mississippi Glass Co.....	17/6
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Nuraplate	15/14
Nurre Cos., Inc.....	15/14
Owens-Illinois Glass Co.....	3/29
Pittsburgh Plate Glass Co.....	17/1
Pyrex	3/28
Vitrolite Div., Libbey-Owens-Ford Glass Co.....	17/4
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O'Brien Brothers Slate Co., Inc.....	8/24
Penn-Mont	15/8
Rising & Nelson Slate Co.....	8/25
Sheldon Slate Products Co., Inc.....	8/26
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Structural

Allenstone	8/27
Carrara	17/1
Insulux	3/29
Matot, H. A.....	8/23
Owens-Illinois Glass Co.....	3/29
Pittsburgh Plate Glass Co.....	17/1
Pyramid	15/8
Sheldon Slate Products Co., Inc.....	8/26
Structural Slate Co.....	15/8
Vermont Structural Slate Co.....	8/27
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Struco	15/8
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K-Veniences	18/41
Maforco	22/23
Market Forge Co.....	22/23
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Imperial Brass Mfg. Co.....	25/41
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Palmer Products, Inc.....	25/42
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Soapierior	25/44
Tilt-Type	25/42
Tipowder	25/42
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Watrous	25/41
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Procter & Gamble Co.	25/43
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Flaxoap	16/29
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Colgate-Palmolive-Peet Co.	25/40
Palmer Products, Inc.	25/42
Palmolive	25/40
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Colgate-Palmolive-Peet Co.	25/40
Imperial Brass Mfg. Co.	25/41
Latherator	25/45
Palmer Products, Inc.	25/42
Palmolive	25/40
Soaparatus	25/45
Soapierior	25/44
U. S. Sanitary Specialties Corp.	25/44
Watrous	25/41
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Alberene Stone Corp. of Virginia	3/10
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Ceiling

Ackerman-Johnson Co.	18/38
Bethlehem	3/50
C-B	26/93
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Donley Brothers Co.	26/104
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Goldsmith Metal Lath Co.	14/3
Grinnell Co., Inc.	26/93
Healy-Ruff Co.	26/75
Simplex	26/93
Truscon Steel Co.	11/12
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Bryant Electric Co.	27/7
G-E	27/8
General Electric Co.	27/8
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Water

International Nickel Co., Inc.	24/39
Monel Metal	24/39
Permutit Co.	24/49
Scaife, Wm. B., & Sons Co.	24/51
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See Greenhouses and Conservatories; Enclosures—Glass

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Blowers and Cleaners

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(See also Acoustical—Materials and Treatments)

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See Doors—Sound Retarding

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See Wall—Board—Fiber; Insulation

Floor and Wall

See Insulation

Gypsum

See Floor Construction—Gypsum; Floor—Voids; Tile—Hollow—Gypsum

Machinery Insulation or Vibrations

See Machinery—Isolation or Insulation or Vibrations

Mineral Wool

See Wool—Mineral or Rock

Nailing Concrete

See Nailing Concrete

Partitions—Folding

See Partitions—Folding—Sound Retarding

Quilted Felt

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Rock Wool

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Sheet Steel

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Wall Board

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See Wall—Board—Fiber; Insulation—Board Form

Sound Deadening Systems

(See also Acoustical Materials and Treatments; Insulation)

Absorbex	13/24
Audicoustone	14/20
Balsam-Wool	13/26
Calice	13/32
Fir-Tex Insulating Board Co.	13/18
J-M	13/31
Johns-Manville	13/31
Keasbey & Mattison Co.	13/32
Korfund Co., Inc.	13/46
Thermax Div., Northwest Magnesite Co.	13/24
USG	13/25
USG Resilient Plastering System	13/25
USG Resilient Sheetrock System	13/25; 14/9
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RCA Victor	29/18
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Sound Reproduction Systems

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Brass or Bronze

See Ornamental—Metal Work; Castings—Brass or Bronze

Cast Iron

See Ornamental—Metal Work; Castings—Brass or Bronze

Felt, Cloth or Fabric

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Lead

See Leadwork—Decorative

Lead Covered Sheet Metal

See Sheet Metal—Lead Covered

Slate

See Slate—Structural

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See Sheet Metal

Stone

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Terra Cotta

See Terra Cotta—Architectural

Spanners

Fire Hose

See Fittings—Fire Hose

Spiral

Column Reinforcement

See Concrete—Reinforcement

Fire Escapes

See Fire—Escapes—Spiral

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Stairs

See Stairs—Iron or Steel—Spiral

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Belson Mfg. Co.	28/12
Bel-Sun-Lite	28/12
Bright Light Reflector Co., Inc.	28/11
Curtis Lighting, Inc.	28/14
G-E	28/17
General Electric Co.	28/17
Kliegl Bros.	28/18
Silv-A-King	28/11
Westinghouse Electric & Mfg. Co.	28/9
X-Ray	28/14
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Spring Plates for

Running Machinery Vibration

Korfund Co., Inc.	13/46
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Springboards

(See also *Swimming Pool—Equipment*)

Brandsten	23/29
Everson Filter Co.	23/30
Van Arsdale-Harris Lumber Co., Inc.	23/29

Sprinkler

System Supervisory Service

ADT	29/1
American District Telegraph Co.	29/1
Faraday	29/8
Gamewell Co.	29/5
Gamewell Sprinkler Watchman	23/2
Rockwood Sprinkler Co.	23/2
Sprinklarm	29/5

Systems—Automatic—Fire

Certifire	23/2
Duraspeed	23/1
Gamewell Co.	29/5
Grinnell Co., Inc.	23/1
Home Guard	23/2
Rockwood Sprinkler Co.	23/2
Sprink-la-stat	29/5

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(See also *Barn Equipment*)

Louden Machinery Co.	23/39
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Asbestos—Cement

J-M	8/37
Johns-Manville	8/37
Transite	8/37

Book, Newspaper, etc.

See Books—Stacks

Breeching

See Steel—Plate Construction

Metal

GF	21/1
General Fireproofing Co.	21/1
Lyon Metal Products, Inc.	21/12
Mitco	6/16

Smoke—Steel

See Smoke—Stacks—Steel; Steel—Plate Construction

Stadium

Seating

See Seating—Portable; Bleachers—Seating

Stage

Effects, Property, etc.

Kliegl Bros.	28/18
See also	23/19

Elevators

Clark, Peter, Inc.	23/19
ES	30/13
Elevator Supplies Co., Inc.	30/13
See also	30/8

Fittings and Lighting—Electrical

(Including: *Floodlights; Border Lights; Proscenium Lights; Strip Lights; Stage Pockets, Plugs, Receptacles and Connectors, etc.*) (See also *Specific Product.*)

Belson Mfg. Co.	28/12
Bel-Sun-Lite	28/12
Century Lighting Equipment, Inc.	28/13
Day-Brite Reflector Co.	28/15
Kliegl Bros.	28/18

Rigging

Clark, Peter, Inc.	23/19
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Theater Curtains

Clark, Peter, Inc.	23/19
ES	30/13
Elevator Supplies Co., Inc.	30/13

Ventilators

American 3 Way-Luxfer Prism Co.	9/1
KuPe	9/1
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Stainless

Steel

See Metals—Stainless Steel; Steel—Stainless

Stains

Brick and Stucco—Waterproof

Artstone Rocor Corp.	16/6
Cabot, Samuel, Inc.	16/9
Rocor	16/6
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Mortar

Adensite Co., Inc.	4/1
Colormix	4/13
Colorundum	4/9
Drival	4/4
Dycrome	4/13
Horn, A. C., Co.	4/9
Keramik	4/9
Master Builders Co.	4/13
Master Mix	4/13

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Mortar—Cont.

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Maximent Co.	15/9
Metalicon	4/13
Omicron-Mortarproofing	4/13
Pecora Paint Co., Inc.	3/42
PurTone	4/1
R.I.W.	4/20
Ricketson Mineral Color Works.	3/43
Staybrite	4/9
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Cabot, Samuel, Inc.	16/9
Certain-teed Products Corp.	16/10
Conserve	16/9
Edham	8/61
Kyanize	16/7
Olo	16/28
Passonno-Hutcheon Co.	16/28
Pitcairn	17/1
Pittsburgh Plate Glass Co.	17/1
Sherwin-Williams Co.	16/29
Tor-on	17/1
Weatherbest Corp.	8/60
Weyerhaeuser Sales Co.	8/61
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Specifications	16/7; 16/9; 16/29; 17/1

Wood—Acid, Oil, etc.

Berry Brothers, Inc.	16/8
Berrytone	16/8
Cabot, Samuel, Inc.	16/9
Certain-teed Products Corp.	16/10
du Pont de Nemours, E. I., & Co., Inc.	16/15
Flo-lac	16/29
Handcraft	16/29
Minwax Co., Inc.	4/12
Murphy Varnish Co.	16/23
O'Brien Varnish Co.	16/27
Pitcairn	17/1
Pittsburgh Plate Glass Co.	17/1
Pyramid	16/27
Rexpar	16/29
Sherwin-Williams Co.	16/29
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Specifications	16/8; 16/9; 16/15; 16/23; 16/27; 16/29; 17/1

Wood—Preservative and Wax Combination

Minwax Co., Inc.	4/12
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Stairs

Art Marble

See Art—Marble

Disappearing—Ceiling Suspended—Steel

Bessler Disappearing Stairway Co.	21/25
Specifications	21/25

Disappearing—Ceiling Suspended—Wood

Bessler Disappearing Stairway Co.	21/25
Farley & Loetscher Mfg. Co.	21/26
Presto	21/26
Qualitybilt	21/26
Victor	21/26
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Emergency

See Fire—Escapes

Folding—Ceiling Suspended

See Stairs—Disappearing

Iron or Steel

Logan Co.	7/18
See also	6/23; 23/15

Iron or Steel—Channel Stringers for

J & L	6/5
Jones & Laughlin Steel Corp.	6/5
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Iron or Steel—Spiral

American Abrasive Metals Co.	6/6
FerAlun	6/6
Smyser-Royer Co.	28/1

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Iron or Steel—Standard

Art Metal Construction Co.	21/2
Bois	9/7
Central Wire and Iron Works.	6/4
Ever-Ready	6/4
Kawneer Co.	11/10
Logan Co.	7/18
Par-Brook Mfg. Co.	21/4
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Iron or Steel—Treads for

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Movable—Disappearing

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Treads and Nosings

See Treads and Nosings

Treads and Risers

See Treads and Risers

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Louden Machinery Co.	23/39
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Admiral	25/14
All-metal	20/7
Ambassador	25/13
American Steel Furniture Co.	20/12
Aristocrat	25/13
Bathe-Rite	25/17
Commodore	25/13
Cottager	25/18
De Luxe Chromestile Admiral.	25/14
Elkay Mfg. Co.	25/13
Ensign	25/14
Fiat Metal Mfg. Co.	25/14
Flush-Metal Partition Corp.	20/14
Junior	25/13
Marine	25/14
Mills Co.	20/7
Milwaukee Stamping Co.	25/17
Neptune	25/14
Panelmetal	20/14
Sanymetal Products Co., Inc.	20/17
Skipper	25/14
Sturdibilt	25/13
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Warrant	25/14
Weis, Henry, Mfg. Co., Inc.	25/18
WeiStall	25/18
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Louden Machinery Co.	23/39
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Toilet, Shower or Urinal

See Partitions—Toilet, Shower or Urinal

Stamped Metal

Work

See Sheet Metal—Drawn, Stamped or Spun

Stamps

Time

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Tubular Steel and Wood Lined

Louden Machinery Co.	23/39
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Smyser-Royer Co.	28/1
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Hose Connections

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Allen, W. D., Mfg. Co. 23/3
Elkhart Brass Mfg. Co. 23/4

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Grand

See Grandstands; Gymnasium—Folding Grandstands

Starters

Motor

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Cabinets

See Cabinets—Metal—Storage

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General Bronze Corp. 7/16
Gorham Co. 7/17
McGann, T. F., & Sons Co. 7/20
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Terra Cotta

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Casement Window

See Hardware—Casement Window—Stays

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Edison General Electric Appliance Co., Inc. 22/20
G-E 22/20
Maforco 22/23
Market Forge Co. 22/23
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Connecticut Telephone & Electric Corp.....	29/4
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Bell Telephone System.....	29/13
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Regulators—Damper

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Regulators—Tank or Valve Controlling

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NO-D-K	12/7
Protexol Corp.	12/5
Tennessee Eastman Corp.....	12/7
Terminix	12/8
Terminix, Div. of E. L. Bruce Co.....	12/8
Terminix	15/51
Specifications	12/2; 12/3

Preventive Treatment for Erected Structures

Bruce, E. L., Co.....	15/51
Eastman	12/7
NO-D-K	12/7
Tennessee Eastman Corp.	12/7
Terminix	12/8; 15/51
Terminix, Div. of E. L. Bruce Co.....	12/8

Terra Cotta

Architectural

American Terra Cotta Corp.....	3/14
Atlantic Terra Cotta Co.....	3/15
Eastern Terra Cotta Co.....	3/16
Federal Seaboard Terra Cotta Corp.....	3/17
Kraftile Co.	3/30
See also	3/18

Ashlar

Atlantic Terra Cotta Co.....	3/15
Eastern Terra Cotta Co.....	3/16
Enduro	3/17
Federal Seaboard Terra Cotta Corp.....	3/17

Blocks

See Tile—Hollow—Clay or Terra Cotta

Chimney Caps

See Chimney—Caps and Pots—Clay or Terra Cotta

Roofing—Tile

See Tile—Roofing—Clay or Terra Cotta

Window Sills

See Sills—Window—Terra Cotta

Terrazzine

Treatment

See Terrazzo—Floor Finish; Plaster—Texturing—Colored; Stucco—Portland Cement—Colored—Pre-mixed

Terrazzo

Aggregates

Alundum	15/4
Norton Co.	15/4
Sullivan Granite Co.....	3/9
Westerly	3/9
Specifications	15/4

Cement for

Atlas	15/12
Atlas Waterproofed White	15/12
Atlas White.....	15/12
Universal	15/12
Universal Atlas Cement Co.....	15/12
Specifications	15/12

Terrazzo—Cont.

Cleaning Compounds

See Cleaners, Polishers and Preservatives—Tile, Marble, Linoleum, Brick, etc.

Cove Base

See Terrazzo—Precast

Curing

See Flooring—Cement and Terrazzo—Curing and Protection

Dividing Bars

Lockstrip Mfg. Corp.	15/10
Manhattan Terrazzo Brass Strip Co., Inc.	15/11
T.M.C.	15/10
Truscon Steel Co.	11/12
Twin Anchor	15/11
Specifications	15/10

Dividing Strips—Plastic—Colored

Vogeliner Co.	15/13
Specifications	15/13

Floor—Finish

Britenzit	16/2
Hillyard Chemical Co.	16/2
Lapidolith	16/4
Old Faithful	16/1
Shine-All	16/2
Sonneborn, L., Sons, Inc.	16/4
Trazatite	16/1
Specifications	16/2; 16/4

Flooring—Contractors for

Del Turco Bros., Inc.	6/9
Kompolite Co., Inc.	15/26
Lockstrip Mfg. Corp.	15/10
Marbleloid Inc.	15/27
Specifications	15/26

Flooring—Magnesite

See Flooring—Magnesite Composition

Precast—Wainscoting, Cove Base, Slabs, Trim, etc.

Del Turco Bros., Inc.	6/9
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Tile

See Tile—Terrazzo

Treads

See Terrazzo—Precast; Flooring—Terrazzo

Testing

Borings

See Borings—Test—Foundation

Structural Materials

See Inspection and Testing—Structural Materials

Texturing

Paint

See Painting—Texturing

Theater

Aisle Lights

See Reflectors—Lighting—Aisle Lighting—Theater

Curtain Operators

See Curtains—Theater Stage

Curtains

See Curtains—Theater Stage

Elevators

See Elevators—Theater

Equipment

See Furnishings and Equipment—Theater

Equipment—Electric

See Stage—Fittings and Lighting

Stage Ventilators

See Ventilators—Theater Stage, etc.

Switchboards

See Switchboard—Theater

Ticket Booth and Equipment

See Ticket—Booth and Equipment—Theater

Thermometers

Indicating and Recording

Brown	26/81
Johnson Service Co.	26/79
Minneapolis-Honeywell Regulator Co.	26/81
Record-O-Stat	26/79
Thrush, H. A., & Co.	26/83

Thermostatically Operated

Radiator Valves

See Valves—Radiator—Thermostatically Operated

Thermostats

(See also Controllers—Temperature)

Barber-Colman Co.	26/76
Brown	26/81
Da-nite	26/81
Effco	9/14
Hirschman, W. F., Co., Inc.	9/14
Hold-Heet	26/15
Johnson Service Co.	26/79
Mercoid Corp.	26/80
Minneapolis-Honeywell Regulator Co.	26/81
Modutrol	26/81
Powers Regulator Co.	26/82
Record-O-Stat	26/79
Russell Electric Co.	26/15
Sensatherm	26/80

Weather Compensating

Minneapolis-Honeywell Regulator Co.	26/81
Moderator	26/84
Modutrol	26/81
Webster, Warren, & Co.	26/84

Thimbles

Wire Rope

See Rope—Wire—Fittings for

Thresholds and Saddles

Bluestone

Ambhuco Non-Slip	6/7
American Blue Stone Co.	6/7
Specifications	6/7

Metal

Accurate Metal Weather Strip Co.	19/13
American Mason Safety Tread Co.	6/8
Donley Brothers Co.	26/104
Himco	17/17
Himmel Brothers Co.	17/17
Mason	6/8
Protex Weatherstrip Mfg. Co.	19/19
Rixson, Oscar C., Co.	18/29
Universal Safety Tread, Inc.	6/14
Von Duprin	18/42
Vonnegut Hardware Co.	18/42
See also	7/22; 17/16
Specifications	19/13

Rubber

American Tile & Rubber Co.	15/36
Antico	15/36
Armstrong Cork Products Co.	15/44
Coste, Paul, Inc.	15/37; 15/38
Goodyear Tire & Rubber Co., Inc.	15/39
Hood	15/31; 15/40
Hood Rubber Co., Inc.	15/40
Kennedy, David E., Inc.	15/31
Kompolite Co., Inc.	15/26
Royalite	15/37
Rubber-Marble	15/31
Stedman Rubber Flooring Co.	15/41
Specifications	15/26; 15/31; 15/37; 15/40; 15/41; 15/44

Safety—Non-slip

AlumAlun	6/6
Alumogrit	6/13
American Abrasive Metals Co.	6/6
American Mason Safety Tread Co.	6/8
BronZalun	6/6
Bronzogrit	6/13
FerAlun	6/6
Ferrogrit	6/13
Mason	6/8
NicAlun	6/6
Nicklogrit	6/13

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Thresholds and Saddles—Cont.

Safety—Non-slip—Cont.

(Continued from Previous Page)

Safe Tread Co., Inc.	6/12
Safety Processing Co.	6/11
Saf-on	6/11
Universal Safety Tread, Inc.	6/14
Wooster Products, Inc.	6/13
Specifications	6/6

Slate

Allenstone	8/27
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Soapstone

Virginia Alberene	3/10
Virginia Black Serpentine	3/10

Tile

See Tile

Weatherstrip Combination

(See also Door Bottoms)

Accurate Metal Weather Strip Co.	19/13
Barland Weatherstrip Material Co.	19/15
Beauty-Tread	19/15
Chamberlin Metal Weather Strip Co., Inc.	19/16
J & L	5/6
Jones & Laughlin Steel Corp.	5/6
Master Metal Strip Service	19/17
Perfec-Seal	19/20
Pyramid Metals Co.	19/18
Reese Metal Weather Strip Co.	19/20
Sill-Dor-Seals	19/16
Spanjers, A. J., Co.	19/21
Super-Seal	19/15
See also	19/2; 23/19; 23/23
Specifications	19/13

Throats

Fireplace

See Dampers—Fireplace

Tie

Rods

Aircraft	19/50
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Ties

Bar—Concrete Reinforcing

Bar-Tys	3/47
Bethlehem	3/50
Ceco	3/69
Concrete Engineering Co., Inc.	3/69
Concrete Steel Co.	3/47
Donley Brothers Co.	26/104
Hy-Chairs	3/47
Kalman Steel Corp.	3/50
Ryerson, Joseph T., & Son, Inc.	3/51
Securo	3/47
Ty-Chairs	3/47

Wall—Metal

Bull Dog Floor Clip Co., Inc.	3/54
Concrete Steel Co.	3/47
Donley Brothers Co.	26/104
Gold Bond	14/8
Security	3/47
Wall-Tys	3/47
See also	14/2; 14/13

Wood

See Lumber

Tile

(See also Wall Board—Tiled)

Acoustical

(See also Acoustical Materials and Treatments)

Acoustex	13/28
Acousti-Celotex	13/16
Acoustone	13/25
Akoustolith	13/30
Armstrong Cork Products Co.	13/43
Atlantic Gypsum Products Co., Inc.	13/28
Balsam-Wool	13/26
Calicel	13/32
Celotex Corp.	13/16
Corkoustic	13/43
Fir-Tex Insulating Board Co.	13/18

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Tile—Cont.

Acoustical—Cont.

(Continued from Previous Column)

Guastavino, R., Co.	13/30
Insulite Co.	13/19
J-M	13/31
Johns-Manville	13/31
Keasbey & Mattison Co.	13/32
Nu-Wood	13/26
Perfatile	13/25
Quietile	13/25
Red Top	13/25
Rumford	13/30
Sanacoustic	13/31
Temcoustic	13/43
Transite	13/31
USG	13/25
United States Gypsum Co.	13/25
Wood Conversion Co.	13/26
Specifications	13/25; 13/26; 13/28; 13/30; 13/32; 13/43

Asphalt

Accotile	15/44
Armstrong Cork Products Co.	15/44
Asphalt Block Pavement Co.	15/62
Azrock	15/33
Coste, Paul, Inc.	15/28
Duraflex Corp.	15/29
Durite	15/28
Eightfour	15/63
Hastings Pavement Co.	15/63
J-M	15/30
Johns-Manville	15/30
Kennedy, David E., Inc.	15/31
Kompolite Co., Inc.	15/26
Mastipave	15/46
Mohawk Asbestos Shingles, Inc.	8/13
Moulding, Thos., Floor Mfg. Co.	15/32
Moultile	15/32
Pabco	15/46
Paraffine Cos., Inc.	15/46
Tile-Text	15/26; 15/35
Tile-Text Co.	15/35
USG	8/10
Uvalde Rock Asphalt Co.	15/33
Specifications	15/26; 15/28; 15/30; 15/31; 15/35; 15/44; 15/46; 15/63

Asphalt—Dividing Strips for

See Strips—Metal—Terrazzo Floor, etc.

Board Form

See Wall—Board—Tiled

Ceramic—Decorative and Faience

Artile	3/26
Bander	15/3
Brictile	3/26
Calicel	13/32
Chromatex	15/5
Continental Clay Products Co.	3/21
Guastavino, R., Co.	13/30
Imper-Vit	15/3
Keasbey & Mattison Co.	13/32
Kraftile Co.	3/30
National Tile Co.	15/3
Planatile	15/5
Robertson Art Tile Co.	15/5
Romany	15/7
Rumford	13/30
Sparta Ceramic Co.	15/6
Spartan	15/6
Stark Brick Co.	3/26
Stri-Lief	15/6
Timbrel	13/30
Tredtex	15/5
United States Quarry Tile Co.	15/7

Ceramic—Floor and Wall—Glazed, Unglazed, Matt, Vitreous, Semi-vitreous, etc.

Artile	3/26
Brictile	3/26
Continental Clay Products Co.	3/21
Flormatex	15/5
Hanley Co.	15/2
Imper-Vit	15/3
Kraftile Co.	3/30

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Tile—Cont.

Ceramic—Floor and Wall—Glazed, Unglazed, Matt, Vitreous, Semi-vitreous, etc.—Cont.

(Continued from Previous Page)

<i>Mist-Tones</i>	15/3
National Tile Co.	15/3
<i>No-Cra</i>	15/5
<i>Past-L-Tex</i>	15/3
<i>Planatite</i>	15/5
<i>Resistex</i>	15/5
Robertson Art Tile Co.	15/5
<i>Romany</i>	15/7
<i>Snowwhite</i>	15/5
Sparta Ceramic Co.	15/6
Stark Brick Co.	3/26
<i>Stri-Lief</i>	15/6
<i>Suprotile</i>	15/5
<i>Tredtex</i>	15/5
United States Quarry Tile Co.	15/7
Specifications	15/2

Ceramic—Non-slip

See Tile—Paving—Non-slip

Cleaners and Polishers

See Cleaners, Polishers and Preservatives—Tile, Marble, Linoleum, Brick, etc.

Cork

(See also Insulation)

Armstrong Cork Products Co.	15/44
<i>Bevel-Tile</i>	15/31
<i>Corinco</i>	15/42
Cork Insulation Co., Inc.	15/42
<i>Jointite</i>	13/44; 15/43
Kennedy, David E., Inc.	15/31
Mundet Cork Corp.	13/44; 15/43
<i>Pabco</i>	15/46
United Cork Cos.	13/45
Specifications	15/31; 15/43; 15/44

Cork Composition

Armstrong Cork Products Co.	15/44
Congoleum-Nairn Inc.	15/45
<i>Everlastic</i>	15/31
Kennedy, David E., Inc.	15/31
<i>Linotile</i>	15/44
<i>Sealex Treadlite</i>	15/45
United Cork Cos.	13/45
Specifications	15/31; 15/44; 15/45

Fiber

Armstrong Cork Products Co.	13/43
Celotex Corp.	13/16
<i>Graylite</i>	13/19
Insulite Co.	13/19
<i>J-M</i>	13/21
Johns-Manville	13/21
<i>Nu-Wood</i>	13/26
<i>Standard</i>	13/19
<i>Temlok</i>	13/43
Wheeler Osgood Sales Corp.	12/18
Wood Conversion Co.	13/26
<i>X-ite</i>	15/22
X-ite Corp., Div. of E. L. Bruce Co.	15/22
Specifications	13/26; 13/43; 15/22

Floor—Gypsum

(See also Floor Construction—Gypsum)

Gypsteel Gypsum Plank	3/67
<i>Pyrobar</i>	3/68
Structural Gypsum Division, American Cyanamid & Chemical Corp.	3/67
<i>USG</i>	3/68
United States Gypsum Co.	3/68
Specifications	3/68

Glass for Vault and Sidewalk

See Lights—Vault and Sidewalk

Glazed

See Tile—Hollow—Clay or Terra Cotta—Glazed; Tile—Paving; Tile—Ceramic

Grease, Acid and Alkali Resistant

See Tile—Asphalt

Hollow—Clay or Terra Cotta—Backing Up

See Tile—Hollow—Clay or Terra Cotta—Exterior and Load Bearing

Tile—Cont.

Hollow—Clay or Terra Cotta—Book

See Tile—Hollow—Clay or Terra Cotta—Partition, Furring, etc.

Hollow—Clay or Terra Cotta—Exterior and Load Bearing

Atlantic Terra Cotta Co.	3/15
<i>Natco</i>	3/31
<i>Natco Deco</i>	3/31
<i>Natco Decorata</i>	3/31
<i>Natco Segmentile</i>	3/31
<i>Natco Speed-A-Backer</i>	3/31
<i>Natco Vitritile</i>	3/31
<i>Natco XXX</i>	3/31
National Fireproofing Corp.	3/31
Sayre & Fisher Brick Co.	3/25
<i>Speedtile</i>	3/31
<i>Speedwall</i>	3/31
<i>Unibacker</i>	3/31
See also	8/34

Hollow—Clay or Terra Cotta—Glazed or Unglazed

<i>Alluvial</i>	15/1
American Terra Cotta Corp.	3/14
<i>Artile</i>	3/26
Atlantic Terra Cotta Co.	3/15
<i>Brictile</i>	3/26
Eastern Terra Cotta Co.	3/16
Federal Seaboard Terra Cotta Corp.	3/17
Hood, B. Mifflin, Co.	15/1
<i>Hy-tex</i>	3/22
<i>Imper-Vits</i>	15/3
Krafttile Co.	3/30
<i>Natco</i>	3/31
<i>Natco Vitritile</i>	3/31
National Fireproofing Corp.	3/31
National Tile Co.	15/3
Stark Brick Co.	3/26
<i>Vitribrik</i>	3/31
See also	8/34

Hollow—Clay or Terra Cotta—Partition, Furring, Beam and Column Covering, etc.

American Terra Cotta Corp.	3/14
<i>Artile</i>	3/26
Atlantic Terra Cotta Co.	3/15
<i>Brictile</i>	3/26
Mathieson Alkali Works, Inc.	14/17
<i>Natco</i>	3/31
<i>Natco Decorata</i>	3/31
<i>Natco Vitritile</i>	3/31
National Fireproofing Corp.	3/31
<i>Southern</i>	14/17
<i>Speedtile</i>	3/31
Stark Brick Co.	3/26

Hollow—Clay or Terra Cotta—Segmental and Flat Arch

<i>Natco</i>	3/31
<i>Natco Segmentile</i>	3/31
<i>Natco Vitritile</i>	3/31
<i>Natcoflor</i>	3/31
National Fireproofing Corp.	3/31
Specifications	3/31

Hollow—Gypsum—Partition, Furring, Beam and Column Covering, etc

<i>Acme</i>	3/32
Atlantic Gypsum Products Co., Inc.	14/15
<i>Beaver</i>	3/32
Certain-teed Products Corp.	3/32
<i>Gold Bond</i>	14/8
<i>Gypsteel</i>	3/33
Mathieson Alkali Works, Inc.	14/17
National Gypsum Co.	14/8
<i>Pyrobar</i>	3/68; 14/9
<i>Rockwall</i>	14/15
<i>Southern</i>	14/17
Structural Gypsum Division, American Cyanamid & Chemical Corp.	3/33
<i>USG</i>	3/68
United States Gypsum Co.	3/68; 14/9
Specifications	3/32; 3/68

Hollow Glass

<i>Insulux</i>	3/29
Owens-Illinois Glass Co.	3/29

Tile—Cont.

Hollow or Solid—Cinder Concrete—Load Bearing, Partition, Furring, Floor Arch, etc.

Nailcrete Corp.	3/61
Specifications	3/61

Interlocking Rubber

See Tile—Rubber Floor

Linoleum

See Tile—Cork Composition

Magnesite Composition

See Flooring—Magnesite Composition Slab; Slabs—Magnesite Composition

Mastic Composition

See Tile—Asphalt

Paving Linoleum

See Tile—Cork Composition

Paving—Non-slip

Alundum	6/10; 15/4
Kil-Kraft	8/32
National Tile Co.	15/3
Norton Co.	6/10; 15/4
Robertson Art Tile Co.	15/5
Sparta Ceramic Co.	15/6
Spartan	15/6
Tredtex	15/5
Specifications	15/4

Paving—Quarry or Promenade

Ambuco Non-Slip	6/7
American Blue Stone Co.	3/13; 6/7
Cla-Slab	15/1
Even-Tone	15/2
Flame-Tinted	15/2
Genesee Valley	3/13
Hanley Co.	15/2
Hood, B. Mifflin, Co.	15/1
Kil-Kraft	8/32; 15/1
Ludowici-Celadon Co.	8/33
Mineral Wells Clay Products Co.	8/34
Murray Tile Co.	8/35
North River	3/13
Quaramics	15/1
Romany	15/7
United States Quarry Tile Co.	15/7
See also	15/3
Specifications	3/13; 6/7; 15/2

Paving—Rubber

See Tile—Rubber—Floor

Quarry

See Tile—Paving—Quarry or Promenade

Roofing—Clay or Terra Cotta

(See also Contractors—Roofing)

Atlantic Terra Cotta Co.	3/15
Hood, B. Mifflin, Co.	8/32
Kil-Kraft	8/32
Ludowici-Celadon Co.	8/33
Mineral Wells Clay Products Co.	8/34
Murray Tile Co.	8/35
Rough Velvet	8/35
Rustic	8/35
Saxony	8/35

Roofing—Concrete

(See also Slabs—Concrete—Lightweight)

Federal-American Cement Tile Co.	3/59
Porete Mfg. Co.	3/62
Truscon Steel Co.	3/64
Specifications	3/59

Roofing—Concrete Slab—Light Weight

See Slabs—Concrete—Light Weight

Roofing—Glass Insert

Truscon Steel Co.	3/64
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Roofing—Gypsum

Chemical Corp.	3/67
Gold Bond	14/8
Gypsteel	3/67
Gypsteel Gypsum Plank	3/67
Hoge	3/65
Lathrop-Hoge Gypsum Construction Co.	3/65
National Gypsum Co.	3/66; 14/8

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Tile—Cont.

Roofing—Gypsum—Cont.

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Pyrobar	3/68; 8/10
Structural Gypsum Division, American Cyanamid & Chemical Corp.	3/67
USG	3/68; 8/10
United States Gypsum Co.	3/68; 8/10
Specifications	3/68; 8/10

Roofing—Metal

Edwards Mfg. Co.	8/31
Milcor Steel Co.	14/14
Titelock	14/14
Wheeling Corrugating Co.	14/13
Specifications	8/31

Roofing—Quarry or Promenade

See Tile—Paving—Quarry or Promenade

Roofing—Reinforced Cement

Federal-American Cement Tile Co.	3/59
Porete Mfg. Co.	3/62
Rackle, Geo., & Sons Co.	3/63
Truscon Steel Co.	3/64
Specifications	3/59; 3/63

Rubber—Binding Strips for

See Strips—Metal—Terrazzo Floor, etc.

Rubber—Floor

American Tile & Rubber Co.	15/36
Amtico	15/36
Armstrong Cork Products Co.	15/44
Coste, Paul, Inc.	15/37; 15/38
Goodyear Tire & Rubber Co., Inc.	15/39
Hood	15/31; 15/40
Hood Rubber Co., Inc.	15/40
Kennedy, David E., Inc.	15/31
Kompolite Co., Inc.	15/26
Royalite	15/37
Rubber-Marble	15/31
Stedman Rubber Flooring Co.	15/41
Specifications	15/26; 15/31; 15/37; 15/40; 15/41; 15/44

Sewage Disposal

Aten Sewage Disposal Co., Inc.	24/18
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Sewage Disposal—Connectors for

E-Z	24/19
Kaustine Co., Inc.	24/19

Sheet or Board Form

See Wall—Board—Tiled

Slate

(See also Slate—Roofing; Slate—Structural; Flagging)
Allensstone

8/27

Stairs—Non-slip

See Tile—Paving—Non-slip; Treads—Safety

Steel—Floor Forms

See Forms—Metal

Wall—Asphalt

See Tile—Asphalt

Wall—Load Bearing

See Tile—Hollow—Clay or Terra Cotta—Glazed

Wall—Sheet or Board Form

See Wall—Board—Tiled

Wall—Wood Fiber

See Wall—Board—Tiled; Tile—Fiber

Wood Fiber

See Tile—Fiber

Wood Flooring

See Flooring—Wood Block

X-Ray Protective

Ray Proof Corp.	13/47
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Timber

See Lumber

Time

Recorders

See Recorders—Time

Tin and Terne Plate

See Sheet Metal—Tin and Terne Plate

Toilet

Paper

A. P. W. Paper Co.....	25/46
Onliwon	25/46
Red Cross	25/46

Paper Holders

See Bathroom Accessories

Partition Fittings

See Fittings—Toilet Partition

Partitions

See Partitions—Toilet, Shower or Urinal

Seats

See Closet—Seats

Systems—Chemical

Kaustine Co., Inc.....	24/19
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Systems—Septic Tank

See Septic—Tanks

Tools

Cleaning—Swimming Pool

See Swimming Pool—Cleaning Tools

Conduit

See Conduit—Electrical

Hay and Grain

See	24/32
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Tops

Cabinet

See Cabinet—Tops

Phenolic Fiber—Table, Counter, Bar, etc.

Formica Insulation Co.....	15/15
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Rubber—Desk, Table, etc.

Coste, Paul, Inc.....	15/37
Royalite	15/37
See also	15/41

Sink—Linoleum Composition, Porcelain, Stainless Steel, Monel Metal, etc.

Armstrong Cork Products Co.....	15/44
Art Metal Construction Co.....	22/3
Associated Manufacturers of "Bilt-Well" Mill-work	22/2
Elkay Mfg. Co.....	25/13
International Nickel Co., Inc.....	22/16
Kitchen Maid Corp.....	22/10
Monel Metal	22/16
Perma Sheen	22/17
Silvi Sheen	22/17
Straitline	22/16
Sturdibilt	25/13
Tracy Mfg. Co.....	22/17
Vitro Sheen	22/17
Whitehead	22/16

Towel

Bar or Racks

See Bathroom Accessories

Dryers

See Dryers—Clothes

Towels

Continuous Cloth

Pullclean Towel Cabinet Co., Inc.....	25/48
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Paper

A. P. W. Paper Co.....	25/46
Onliwon	25/46
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Passimeter	23/24
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Roto-Gate	23/24
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 Sturtevant, B. F., Co. 22/37

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Spencer Turbine Co. 22/36

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Garcy 7/15

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 Barnes & Jones, Inc. 26/77
 Hoffman Specialty Co., Inc. 26/87
 New York Air Valve Corp. 26/89
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See Refrigerating and Ice Making—Machinery and Plants

Backwater

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 Wade Mfg. Co. 24/28

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 Fulton Sylphon Co. 26/86
 Hold-Heet 26/15
 Minneapolis-Honeywell Regulator Co. 26/81
 Modutrol 26/81
 Russell Electric Co. 26/15
 Sterling Engineering Co. 26/92
 Sylphon 26/86
 Wade Mfg. Co. 24/28

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 Allen, W. D., Mfg. Co. 23/3
 Jenkins Bros. 24/17

Flap

Josam Mfg. Co. 24/27

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 Cadwell 26/74
 Si-Flo 25/21
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Taco Heaters, Inc. 24/46

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Elkhart Brass Mfg. Co. 23/4
 Jenkins Bros. 24/17
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Elkhart Brass Mfg. Co. 23/4
 Jenkins Bros. 24/17

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Fulton Sylphon Co.	26/86
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Sylphon	26/86
Powers Regulator Co.	25/22
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Fulton Sylphon Co.	26/86
Leonard-Rooke Co.	25/20
Minneapolis-Honeywell Regulator Co.	26/81
Modutrol	26/81
Powers Regulator Co.	25/22
Sterling Engineering Co.	26/92
Sylphon	26/86
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Webster, Warren, & Co.	26/84
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Radiator—Electrically or Pneumatically Operated

Barber-Colman Co.	26/76
Fulton Sylphon Co.	26/86
Johnson Service Co.	26/79
Minneapolis-Honeywell Regulator Co.	26/81
Modutrol	26/81
Powers Regulator Co.	26/82
Sylphon	26/86

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B&J	26/77
Barnes & Jones Inc.	26/77
Fulton Sylphon Co.	26/86
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Sterling Engineering Co.	26/92
Sylphon	26/86
Webster, Warren & Co.	26/84
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Equiflo	26/85
Grinnell Co., Inc.	26/85

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B&J	26/77
Barber-Colman Co.	26/76
Barnes & Jones Inc.	26/77
Grinnell Co., Inc.	26/85
Hoffman Specialty Co., Inc.	26/87
Sarco Co., Inc.	26/90
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Thermoflex	26/85
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Beaton & Cadwell Mfg. Co.	26/74
Cadwell	26/74
Fulton Sylphon Co.	26/86
Minneapolis-Honeywell Regulator Co.	26/81
Modutrol	26/81
Modustat	26/81
Powers Regulator Co.	26/82
Sterling Engineering Co.	26/92
Sylphon	26/86
Thermotrol	26/92
Webster, Warren, & Co.	26/84

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Jenkins Bros.	24/17
Sterling Engineering Co.	26/92
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Elkhart Brass Mfg. Co.	23/4
Fulton Sylphon Co.	26/86
Hoffman Specialty Co., Inc.	26/87
Penberthy Injector Co.	26/91
Sylphon	26/86
Thrush, H. A., & Co.	26/83
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Jenkins Bros.	24/17
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Cadwell	26/74
Jenkins Bros.	24/17
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See Valves—High Seat—for Concealed Work; Mixers—Shower Bath

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See Sprinkler—Systems—Automatic, Fire

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See Valves—Mixing—Steam and Water or Hot and Cold Water

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Taco Heaters, Inc. 24/46

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Wheels for Indicating

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Y

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Berbro	16/8
Berry Brothers, Inc.	16/8
Boston Varnish Co.	16/7
Bruce, E. L., Co.	15/51
Degraco	16/13
Devoe & Raynolds Co., Inc.	16/16
Dixon, Joseph, Crucible Co.	16/14
Dixspar	16/14
Dixspar Bakelite	16/14
du Pont de Nemours, E. I., & Co., Inc.	16/15
Flo-lac	16/29
Floor Spar	17/1
Kyanize	16/7
Linkota	16/15
Liquid Granite	16/8
Mar-Nat Fast-Dri	16/29
Murphy Varnish Co.	16/23
O'Brien Varnish Co.	16/27
Old Faithful	16/1
Olo	16/28
Olo-Var	16/28
Passonno-Hutcheon Co.	16/28
Permatite	16/1
Pittsburgh Plate Glass Co.	17/1
Sherwin-Williams Co.	16/29
Super Spar	16/23
Supremis	16/15
T.T.O.	16/27
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Berbro	16/8
Berry Brothers, Inc.	16/8
Berryspar	16/8
Boston Varnish Co.	16/7
Certain-teed Products Corp.	16/10
Degraco	16/13
Dixon, Joseph, Crucible Co.	16/14
Dixspar	16/14
Dixspar Bakelite	16/14
du Pont de Nemours, E. I., & Co., Inc.	16/15
Floor-Seal	16/29
Four Hour	16/23

(Continued on Next Page)

Varnish—Cont.

Interior or Exterior—Cont.

(Continued from Previous Page)

Kyanize	16/7
Luxeberry	16/8
Merco	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Murphy Varnish Co.	16/23
O'Brien Varnish Co.	16/27
Old Faithful	16/1
Olo	16/28
Olo-Spar	16/28
Olo-Speed	16/28
Olo-Var	16/28
Pabco	15/46
Passonno-Hutcheon Co.	16/28
Permatite	16/1
Pitcairn-Aged	17/1
Pittsburgh Plate Glass Co.	17/1
Rexpar	16/29
Scar-Not	16/29
Semi-Gloss	16/23
Sherwin-Williams Co.	16/29
Shipoleum	16/15
Super Spar	16/23
T.T.O.	16/27
Universal	16/10
Velvet-Finish	16/29
Velvet Floor	16/23
Waterspar	17/1
Water White	16/8
See also	3/42; 15/46; 16/4; 16/19; 16/30
Specifications	16/7; 16/8; 16/23; 16/27; 16/29; 17/1

Lacquer

See Lacquer

Rubbing

See Varnish—Interior or Exterior

Spar

Airplane Super	16/23
Berry Brothers, Inc.	16/8
Berryspar	16/8
Boston Varnish Co.	16/7
Certain-teed Products Corp.	16/10
Dixon, Joseph, Crucible Co.	16/14
Dixspar	16/14
Dixspar Bakelite	16/14
Kyanize	16/7
Marine Spar	17/1
Murphy Varnish Co.	16/23
Navalite	16/15
Pitcairn	17/1
Pitcairn-Aged	17/1
Pitcairn Master Painters	17/1
Pittsburgh Plate Glass Co.	17/1
Rexpar	16/29
Sherwin-Williams Co.	16/29
Waterspar	17/1
See also	4/4; 16/30
Specifications	16/7; 16/8; 16/23; 16/29; 17/1

Stained

Berry Brothers, Inc.	16/8
Flo-lac	16/29
Luxeberry	16/8
Mar-Not Fast-Dri	16/29
Sherwin-Williams Co.	16/29
Specifications	16/8; 16/29

Vases

Garden—Terra Cotta

See Pottery—Garden

Vault

Burglar Alarms

See Burglar Alarms—Electric

Doors

Mosler Safe Co.	23/9
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Fixtures

See Vaults—Safe Deposit and Bank; Filing Equipment—Metal

Protection Alarms

See Signal Systems; Burglar Alarms

Ventilators

See Ventilators—Vault

Vaults

Arched

See Ceilings—Vaulted

Concrete Reinforcement for

Consolidated Expanded Metal Cos.	23/5
Steelcrete	23/5

Equipment—Metal

See	21/4
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Fire-resistive Fronts

Diebold Safe & Lock Co.	23/6
Herring-Hall-Marvin Safe Co.	23/7
Mosler Safe Co.	23/9
Triumph	23/6
York Safe and Lock Co.	23/8

Safe Deposit and Bank—Burglar-resistive

Diebold Safe & Lock Co.	23/6
Mosler Safe Co.	23/9
York Safe and Lock Co.	23/8
See also	23/7

Sidewalk Lights for

American 3 Way-Luxfer Prism Co.	9/23
Grauer, Albert, & Co.	9/24
Magnalite	9/26
New Unity	9/26
Richards, J. Merrill	9/26
Richards & Kelly Mfg. Co.	9/25
3 Way	9/23
See also	6/1
Specifications	9/23; 9/24

Vegetable

Peelers

See Kitchen—Vegetable Peelers

Veneer

Plywood

See Plywood

Veneered

Doors

See Doors—Veneered

Panels

See Panels—Veneered

Veneers

Wood

(See also Panels—Veneered)

Mahogany Association, Inc.	12/13
Penrod, Jurden & Clark Co.	12/14
Roddis Lumber and Veneer Co.	10/35
Specifications	10/35

Wood—Cloth Backed

Ericon	12/19
Flexwood	12/19
United States Plywood Co., Inc.	12/19

Venetian

Blinds—Cloth

Simon Ventilighter Co., Inc.	19/35
Ventilighter	19/35

Blinds—Metal

Simon Ventilighter Co., Inc.	19/35
United Metal Blind Co., Inc.	19/37
Ventilighter	19/35

Blinds—Wood

Airflo	19/33
Aristocrat	19/31
Bostwick-Goodell Co.	19/28
Burlington Venetian Blind Co.	19/29
Color Edge	19/10
Columbia Mills, Inc.	19/30
Cooley Inc.	19/31
E-Z	19/29
Easy Lift	19/28
Higgin Mfg. Co.	19/32
Huttig Sash & Door Co. of St. Louis ..	19/33
Interstate Shade Cloth Co.	19/34
Pella	19/10
Rolscreen Co. of Pella, Iowa.	19/10
Simon Ventilighter Co., Inc.	19/35

(Continued on Next Page)

Venetian—Cont.

Blinds—Wood—Cont.

(Continued from Previous Page)

Swedish Venetian Blind Co.	19/36
Universal	19/34
Ventilghter	19/35
Victoria	19/28
Warren Shade Co.	19/38
Watson Mfg. Co., Inc.	19/12
Western Venetian Blind Co.	19/39
Wilson, J. G., Corp.	19/40
Specifications	19/10; 19/30; 19/33; 19/39

Vent Connections

Roof

Barrett Co.	8/3
Holt	8/3
Josam Mfg. Co.	24/27
Specifications	8/3

Ventilating

Brick

See Ventilators—Wall—Common Brick Size

Grilles

See Grilles and Screens; Dampers or Registers

Pipe—Acid Resisting

Knight, Maurice A.	24/16
Knight-Ware	24/16

Skylights

See Skylights—Ventilating

Systems—Forced Draft

Snead & Co.	21/5
Sturtevant, B. F., Co.	26/16
Wing, L. J., Mfg. Co.	26/67
Zig-Zag	21/5
See also	23/39

Window Shades

See Shades—Window, Skylight, etc.—Ventilating

Ventilating and Heating

Units Combined

See Heating and Ventilating—Units Combined

Ventilator

Bases

Burt Mfg. Co.	9/12
Effico	9/14
Hirschman, W. F., Co., Inc.	9/14
K-S-V	9/15
Milcor Steel Co.	9/16
Robertson, H. H., Co.	9/19
RPM	9/19
Specifications	9/14

Cord

See Cord

Curbs—Steel

Hirschman, W. F., Co., Inc.	9/14
Specifications	9/14

Ventilators

Attic—Gable

Aiolite Co.	19/23
American Coolair Corp.	26/60
Century Fan & Engineering Co.	9/13
Coolair	26/60
Riesner, Benjamin	9/22
Sturtevant, B. F., Co.	26/65
See also	9/10

Barn

See Ventilators—Roof

Controls for

See Regulators—Damper

Door Panel, Transom, etc.—Louvered

Aiolite Co.	19/23
Ellison Bronze Co., Inc.	19/24
Panelouvre	19/26
Van Zile Ventilating Co.	19/25
Ventadoor	19/25
Ventilouvre Co., Inc.	19/26
Specifications	19/23; 19/25 19/26

Ventilators—Cont.

Gable

See Ventilators—Attic—Gable

Glass Top

See Ventilators—Roof

Grille

See Grilles and Screens—Metal—Ventilating; Perforated Metal—Grilles; Registers—Heating and Ventilating

Mushroom

Aeolus Dickinson Industrial Div. Paul Dickinson, Inc.	9/9
Aerovalve	26/56
Best Register Co.	26/49
Dickinson	9/9
Knowles Mushroom Ventilator Co.	26/56
Nu-Notch	26/56
Specifications	26/56

Projection Room

Aiolite Co.	19/23
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Ridge

Burt Mfg. Co.	9/12
Dexter Heat Valve	8/20
Drouve, G., Co.	9/2
Monovent	9/12
Swartwout Co.	9/20
Specifications	9/20

Roof—Power Driven (Electric or Motor)

Allen Corp.	9/10
Arex Co.	9/11
Burt Mfg. Co.	9/12
Century Fan & Engineering Co.	9/13
Economy	9/11
Effico Wind-Electric	9/14
Electro-Wind	9/10
Forst-Aire	9/12
Giant Nite Fan	26/15
Hirschman, W. F., Co., Inc.	9/14
Isolated F	9/14
LeRoy	9/14
Lornate	9/14
Penn Ventilating Co.	9/17
Robertson, H. H., Co.	9/6; 9/19
Royal Ventilator Co.	9/18
RPM	9/6; 9/19
Russell Electric Co.	26/15
Western Rotary Ventilator Co., Inc.	9/21
Specifications	9/14

Roof—Revolving (Wind Propelled)

Allen Corp.	9/10
Arex Co.	9/11
Burt Mfg. Co.	9/12
Century Fan & Engineering Co.	9/13
Effico	9/14
Hirschman, W. F., Co., Inc.	9/14
K-S-V	9/15
Penn Ventilating Co.	9/17
Milcor Steel Co.	9/16
Nu-Alpina	9/16
Swartwout Co.	9/20
Vanco	9/7
Western Rotary Ventilating Co., Inc.	9/21
Specifications	9/14; 9/20

Roof—Rotary

See Ventilators—Roof—Revolving

Roof—Stationary (Siphonage)

Æolus Dickinson Industrial Div. Paul Dickinson, Inc.	9/9
Alcoa	9/10
Arex-Auxtor	9/11
Arex Co.	9/11
Burt Mfg. Co.	9/12
Century Fan & Engineering Co.	9/13
Firma	9/14
Forbes	9/21
Hirschman, W. F., Co., Inc.	9/14
J-M	8/37
Johns-Manville	8/37
K-S-V	9/15
Kernchen Co.	9/15
Liberty	9/17
Lornate	9/14
L-U	9/14

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Ventilators—Cont.

Roof—Stationary (Siphonage)—Cont.

(Continued from Previous Page)

Milcor Steel Co.	9/16
Nu-Air	9/16
Nuvents	9/9
Penn Ventilating Co.	9/17
Pul-Air	9/17
Robertson, H. H., Co.	9/6; 9/19
RPM	9/6; 9/19
Royal Ventilator Co.	9/18
S-E	9/14
Transite	8/37
Vanco	9/7
See also	10/11; 23/39; 26/45
Specifications	9/14; 9/15; 9/18

Sash

See Ventilators—Window—Brackets for

Sidewalk

See 6/1; 9/24

Siphonage

See Ventilators—Roof

Skylight

(Including: Aluminum, Sheet Metal and Puttyless)

American 3 Way-Luxfer Prism Co.	9/1
Cibulas	9/3
Effco	9/14
General Sheet Metal Works, Inc.	9/3
Hirschman, W. F., Co., Inc.	9/14
Louden Machinery Co.	23/39
Milcor Steel Co.	9/16
Vent-O-Lite Co.	9/8
See also	9/4
Specifications	9/14

Theater Stage, Elevator Shaft, etc.—Automatic

American 3 Way-Luxfer Prism Co.	9/1
KuPe	9/1
See also	10/11

Vault

Bankers Electric Protective Assn.	23/10
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Wall and Ceiling

See Grilles and Screens; Dampers or Registers

Wall—Common Brick Size

Riesner, Benjamin	9/22
Specifications	9/22

Wall—Fan Unit

(See also Fans—Ventilating or Exhaust)

American Warming & Ventilating Co.	26/46
Emerson Electric Mfg. Co.	26/63
Ilg Electric Ventilating Co.	26/62
In-Bilt	26/66
Pacific Breeze	26/64
Pryanco	26/64
Pryne & Co., Inc.	26/64
Silentaire	11/12
Victor Electric Products, Inc.	26/66
Truscon Steel Co.	11/12
See also	26/45

Wall Foundation, Attic, etc.

Aeolus Dickinson Industrial Div. Paul Dickinson, Inc.	9/9
Dickinson	9/9
Donley Brothers Co.	26/104
Riesner, Benjamin	9/22

Wall—Lightproof

Airolite Co.	19/23
Ray Proof Corp.	13/47

Wall—Partitions, Closet, etc.

Panelouvre	19/26
Ventilouvre Co., Inc.	19/26
Specifications	19/26

Window

Airolite Co.	19/23
Arex Co.	9/11
Arin	9/11
Chamberlin Metal Weather Strip Co., Inc.	19/2
Detroit Steel Products Co.	11/5
Ideal Ventilator Co.	19/22

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Ventilators—Cont.

Window—Cont.

(Continued from Previous Column)

Nu-Stile Cel-O-Glass	19/2
Panelouvre	19/26
Silentaire	11/12
Tilt-in	11/5
Ventilouvre Co., Inc.	19/26
Vimlite	19/5
Truscon Steel Co.	11/12

Window—Brackets for

Ideal Ventilator Co.	19/22
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Window—Fan Unit

Emerson Electric Mfg. Co.	26/63
Sturtevant, B. F., Co.	26/65

Window—Ventilating

Sturtevant, B. F., Co.	26/65
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Vents

Air—Heating System

B&J	26/77
Barnes & Jones Inc.	26/77
Hoffman Specialty Co., Inc.	26/87
New York Air Valve Corp.	26/89
Nyavco	26/89
Sarco Co., Inc.	26/90
Sterling Engineering Co.	26/92
Webster, Warren, & Co.	26/84
See also	26/24

Grille

See Grilles and Screens; Dampers and Registers

Roof

Aeolus Dickinson Industrial Div. Paul Dickinson, Inc.	9/9
Barrett Co.	8/3
Dickinson	9/9
Harrington, L. W.	24/25
Holt	8/3
Josam Mfg. Co.	24/27
Louden Machinery Co.	23/39
Mahon, R. C., Co.	24/26
Wade Mfg. Co.	24/28
Zurn, J. A., Mfg. Co.	24/29
See also	24/15
Specifications	8/3

Verandas

Metal

See Ornamental—Metal Work; Fencing; Railings, etc.

Vestibules

Metal

See Ornamental—Metal Work; Doors—Entrance—Bronze, Brass, Iron, Aluminum, Chrome and Nickel Alloys

Vibration Isolation

Machinery

J-M	13/31
Johns-Manville	13/31
Jointite	13/44
Mundet Cork Corp.	13/44
Trembar	13/25
USG	13/25
United Cork Cos.	13/45
United States Gypsum Co.	13/25
Specifications	13/44

Pipe

See Insulation—Pipe Vibration

Viewing

Cabinets

See Cabinets—X-Ray—Viewing

W

Wainscoting

Acoustical

See Acoustical Materials and Treatment

Wainscoting—Cont.

Armored Concrete

See 6/2

Art Marble

See Art—Marble

Asbestos

See Wall—Board—Asbestos; Wall—Board—Tiled

Asphalt Mastic

See Flooring—Asphalt Mastic

Cork Tile

See Tile—Cork

Fiber Board

See Wall—Board Fiber

Magnesite Composition

See Flooring—Magnesite Composition

Marble

See Marble—Interior and Exterior; Art—Marble; Terrazzo—Precast—Wainscoting Cove Base, Slabs, Trim, etc.

Phenolic Fiber

See Panels—Phenolic Fiber

Plywood

See Plywood

Portland Cement

See Cement Portland—Colored Premixed

Rubber

See Tile—Rubber Floor

Soapstone

See Soapstone

Structural—Glass

See Glass—Structural

Terrazzo

See Terrazzo—Precast

Tile

See Tile

Veneered

See Panels—Veneered

Wood

See Cabinet Work; Millwork

Wood—Fiber

See Mouldings—Wood—Fiber

X-Ray Protective

See Panels—X-Ray Protective

Wall

Base

See Cove Base; Treads; Flooring

Base—Art Marble

See Art—Marble

Base—Bluestone

See Treads—Bluestone; Flooring—Bluestone; Bluestone

Base and Electric Conduit—Combination

See Base—Combined with Electrical Distribution System

Beds

See Beds—Disappearing or Built-in

Coverings

See Coverings—Wall

Finishes

See Paint

Hangers

See Hangers—Beam, Joist, Wall, etc.

Paint

See Paint—Wall

Receptacles—Electric

See Receptacles—Electric

Ties

See Ties—Wall—Metal

Tile

See Specific Kind of Tile

Wall Board

(See also Insulation)

Aluminum Foil Covered

Alfol Insulation Co., Inc.	13/2
Atlantic Gypsum Products Co., Inc.	14/15
Evenaire	13/20
Gold Bond	13/23; 14/8
Kelley Plasterboard Co., Inc.	14/18
National Gypsum Co.	13/23; 14/8
Plastergon Wall Board Co.	13/20
Rockwall	14/15
Specifications	13/23; 14/8

Asbestos-Cement

Asbestos-Sponge	13/39
Asbestocel	13/39
Air-Acoustic	13/31
Rock Cork	13/39
Duo-Tone Walltile	15/17
Flexboard	15/16
J-M	8/7; 8/37; 13/31; 13/39; 15/16; 20/6
Johns-Manville	8/7; 8/37; 13/31; 13/39; 15/16; 20/6
K&M	15/17
Keasbey & Mattison Co.	15/17
Linabestos	15/17
Newmarble	15/20
Sil-O-Cel	13/39
Superex	13/39
Super-Fire-Felt	13/39
Roofinsul	8/7; 13/39
Ruberoid Co.	15/20
Sheetflextos	15/17
Transite	8/37; 13/31; 13/39; 20/6
Vitribestos	13/39
Walltile	15/17
Specifications	8/7; 8/37; 15/16

Cane

Beaver	13/17
Beaver Key Lap	13/17
Certain-teed Products Corp.	13/17

Cement for

AcouSTICK	13/15
Atlas Supply Co.	13/15
Celotex Corp.	13/16

Cork

Armstrong Cork Products Co.	13/43
Corinco	15/42
Cork Import Corp.	13/42
Cork Insulation Co., Inc.	15/42
Corkanstele Co.	5/3
Jointite	13/44; 21/8
Mundet Cork Corp.	13/44; 21/8
Novoid Airtile	13/42
United Cork Cos.	13/45
Specifications	13/43

Fiber

Agasote Millboard Co.	13/14
Armstrong Cork Products Co.	13/43
Atlantic Gypsum Products Co., Inc.	13/28; 14/15
Beaver	14/16
Bestwall	14/16
Bruce, E. L., Co.	15/51
Celotex Corp.	13/16
Certain-teed Products Corp.	14/16
C-X	13/16
C-X Wallboard	13/16
DeLuxe Dualboard	13/19
De Luxe Panelboard	13/21
Dualboard	13/19
Economy	13/20
Emerald	13/20
Evenaire	13/20
Fir-Tex Insulating Board Co.	13/18
Gold Bond	13/23; 14/8
Graylite	13/19
Gyplap	8/10
Homasote	13/14
Insulating Rocklath	13/25
Insulating Sheetrock	13/25
Insulite Co.	13/19
J-M	13/21
Johns-Manville	13/21
Jumbo	14/16
Lok-Joint Lath	13/19

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Wall Board—Cont.

Fiber—Cont.

(Continued from Previous Page)

Mammoth	13/20
Marlite	15/18
Marshmarble	15/18
Marshtile	15/18
Marsh Wall Tile Co.	15/18
Marshwood	15/18
Masonite Corp.	3/45; 13/22
National Gypsum Co.	13/23; 14/8
Neponset	8/4
Nu-Wood	13/26
PanLboard	13/21
Perfect-O-Cell	13/20
Plastergon Wall Board Co.	13/20
Plywood Tile and Floor Co., Inc.	15/19
Porete Mfg. Co.	3/62
Porex	3/62
Presdwood	13/22
Q-Bord	13/14
Quatrboard	13/22
Red Top	8/10; 13/25
Rockwall	13/28; 14/15
Roofinsul	13/21
Sheetrock	8/10
Sheetrock Panelwood	8/10
Sheetrock Resilient	8/10
Standard	13/19
Suede Finish	13/14
Temboard	13/43
Temlok	13/43
Tempered Presdwood	3/45
Temwood	13/43
Thermax Div., Northwest Magnesite Co.	13/24
Thermosote	13/14
USG	8/10; 13/25
United States Gypsum Co.	8/10; 13/25
Vehisote	13/14
Weatherwood	8/10; 13/25
Wood Conversion Co.	13/26
X-ite	15/22; 15/51
X-ite Corp., Div. of E. L. Bruce Co.	15/22
Specifications	3/45; 13/16; 13/19; 13/21; 13/22; 13/23; 13/24; 13/25; 13/26; 14/8; 15/22

Finishes

See Paint

Gypsum

Atlantic Gypsum Products Co., Inc.	14/15
Beaver	14/16
Bestwall	14/16
Certain-teed Products Corp.	14/16
Gold Bond	13/23; 14/8
Insulating Rocklath	13/25
Insulating Sheetrock	14/9
Mathieson Alkali Works, Inc.	14/17
National Gypsum Co.	13/23; 14/8
Red Top	3/29; 14/9
Rocklath	14/9
Rockwall	14/15
Sheetrock	13/25
Sheetrock Panelwood	14/9
Southern	14/17
USG	8/10
United States Gypsum Co.	13/25; 14/9
Weatherwood	8/10
Wood Grained Sheetrock	14/9
Specifications	14/8; 14/9; 14/16

Gypsum—Cork

Kelley Plasterboard Co., Inc.	14/18
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Gypsum—Imitation Wood

Gold Bond	14/8
National Gypsum Co.	14/8
United States Gypsum Co.	14/9
Wood Grained Sheetrock	14/9
Specifications	14/8

Gypsum—Reinforced Joint

Clip-On Systems	14/8
Gold Bond Ideal	14/8
National Gypsum Co.	14/8
Specifications	14/8

Insulating

See Specific Type of Wall Board

Wall Board—Cont.

Joint Finisher

Armstrong Cork Products Co.	13/43
Atlantic Gypsum Products Co., Inc.	14/15
Certain-teed Products Corp.	14/16
Gold Bond	14/8
National Gypsum Co.	14/8
Rockwall	14/15
Sheetrock	14/9
Temlok	13/43
United States Gypsum Co.	14/9
Specifications	13/43; 14/9

Magnesium

Featherweight	13/40
Hy-Temp	13/40
K & M	13/40
Keasbey & Mattison Co.	13/40
Lamino	13/40
See also	13/6

Marbleized Finish

(See also Panels)

Bruce, E. L., Co.	15/51
Flexboard	15/16
Formica Insulation Co.	15/15
J-M	15/16
Johns-Manville	15/16
Marshmarble	15/18
Marsh Wall Tile Co.	15/18
Micarta	15/21
Newmarble	15/20
Ruberoid Co.	15/20
Westinghouse Electric & Mfg. Co.	15/21
X-ite	15/22; 15/51
X-ite Corp., Div. of E. L. Bruce Co.	15/22
Specifications	15/16; 15/22

Metal Covered

Ferroclad	11/12
Insulating Rocklath	13/25
Insulating Sheetrock	13/25; 14/9
Perfatile	13/25
Truscon Steel Co.	11/12
United States Gypsum Co.	13/25; 14/9

Non-inflammable

See Specific Type of Wallboard

Phenolic Fiber

See Panels—Phenolic Fiber

Plywood

Douglas Fir Plywood Assn.	12/17
Laminex	12/18
Plyform	10/36
Wheeler Osgood Sales Corp.	12/18

Reflector Type

Silvercote Products, Inc.	13/10
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Tiled

Acoustic-Celotex	13/16
Armstrong Cork Products Co.	13/43
Beaver	13/17; 14/16
Celotex Corp.	13/16
Certain-teed Products Corp.	13/17; 14/16
Duo-Tone Walltile	15/17
Flexboard	15/16
Gold Bond	13/23; 14/8
Graylite	13/19
Insulite Co.	13/19
J-M	15/16
Johns-Manville	15/16
Keasbey & Mattison Co.	15/17
Marshtile	15/18
Marsh Wall Tile Co.	15/18
Masonite Corp.	13/22
National Gypsum Co.	13/23; 14/8
Newtile	15/20
Plastergon Wall Board Co.	13/20
Plywood Tile and Floor Co., Inc.	15/19
Ruberoid Co.	15/20
Sheetflexos	15/17
Sheetrock	14/9
Standard	13/19
Tempered Temwood	13/43
Temprtile	13/22
Temwood	13/43
United States Gypsum Co.	14/9
Walltile	15/17
Specifications	13/16; 13/19; 13/22; 14/8; 15/16

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X-Ray Proof or Protective

Ray Proof Corp.....13/47

Walls

Folding—Fabric

See Partitions—Folding—Fabric Covered

Folding—Wood

See Partitions—Folding—Wood

Interior—Interchangeable

See Partitions

Sectional

See Partitions

Vertical Sliding

See Partitions—Vertical Sliding

Wardrobes

Blackboard Combination

American Car and Foundry Co..... 21/6
Austral Sales Corp.....18/32
Circle A21/13
Evans, W. L.....21/11
Fairhurst21/6
Newcastle Products, Inc.....21/13
R-W20/24
Richards-Wilcox Mfg. Co., Inc.....20/24
Vanishing Door21/11
Wilson, J. G., Corp.....21/16
Specifications20/24; 21/6; 21/11; 21/13

Folding Fronts for

See Partitions—Folding

Receding Door—Hardware for

See Hangers—Door—Receding

Rolling Door—Hardware for

See Hangers—Door—Receding

Rolling Fronts for

See Partitions—Rolling—Wood

Steel

A-S-E21/7
All-Steel-Equip Co., Inc.....21/7
Art Metal Construction Co.....21/8; 23/16
Austral Sales Corp.....18/32
Berger Mfg. Co., Div. of Republic Steel Corp... 21/9
Berloy21/9
Durabilt Steel Locker Co.....21/10
GF23/17
Hart & Hutchinson21/15
Lockerobe21/14
Lyon Metal Products, Inc.....21/12
Master21/7
Medart, Fred, Mfg. Co.....21/14
Mosler Safe Co.....23/9
Popular21/7
Rigidor21/9
Storite21/15
Tuttle & Bailey, Inc.....21/15
Specifications18/32; 21/9; 21/10; 21/14; 21/15

Wood

R-W20/24
Richards-Wilcox Mfg. Co., Inc.....20/24
Specifications20/24

Wood—Receding or Disappearing Door

(School, Churches, Recreation Centers, etc.)

American Car and Foundry Co..... 21/6
Austral Sales Corp.....18/32
Circle A21/13
Evans, W. L.....21/11
Fairhurst21/6
Newcastle Products, Inc.....21/13
Vanishing Door21/11
Wilson, J. G., Corp.....21/16
Specifications18/32; 21/6; 21/11; 21/13

Wood—Rolling Door

Wilson, J. G., Corp.....21/16

Warmers

Blanket

See Cabinets—Hospital—Instrument, Warming, Bedpan, etc.

Plate—Electric

See Plate—Warmers—Electric

Washbasins

Porcelain or Vitreous China, etc.

See Lavatories

Washers

Air

American Blower Corp., Div. of American Radiator & Standard Sanitary Corp..... 26/1
Filticooler26/65
Hold-Heat26/15
Russell Electric Co.....26/15
Sirocco26/1
Sturtevant, B. F., Co.....26/65
See also26/2

Clothes

Minute Man22/33
Spartan22/33
Trojan22/33
Troy Laundry Machinery Div. of American Machine & Metals Mfg. Corp.....22/23
See also27/5

Dish

G-E22/27
General Electric Co.....22/27
Hobart-Crescent22/18
Hobart Mfg. Co.....22/18
Westinghouse Electric & Mfg. Co.....22/15

Garbage Can

Dean22/46
Washburn & Granger, Inc.....22/46

Washfountains

Bradley Washfountain Co.....25/25

Waste

Burners

See Incinerators

Chutes

See Chutes—Waste

Incinerators

See Incinerators

Watchman's

Clock and Tour Systems

ADT29/1
American Automatic Electric Sales Co.....29/12
American District Telegraph Co.....29/1
Autelco29/12
Holtzer-Cabot Electric Co.....29/6
P-A-X29/12
Strowger29/12
See also29/5

Water

Closet Flush Valves

See Valves—Flush

Closet Seats

See Closet—Seats

Closet Tank Fittings

See Closet—Tank Fittings

Closets

See Closets—Water

Coolers—Drinking

See Coolers—Drinking Water

Cooling Systems

See Refrigerating and Ice Making—Machinery and Plants; Refrigerating Machines

Drinking—Coolers

See Refrigerating and Ice Making—Machinery and Plants; Coolers; Fountains—Drinking

Water—Cont.

Drinking Fountains

See Fountains—Drinking

Feeders

See Regulators—Feed Water

Filters

See Filters

Heaters

See Heaters—Water

Low—Protection for Boiler

See Boilers—Low Water Protection for

Paint

See Paint—Water

Purification

See Filters—Gravity or Pressure; Sterilizers—Water;
Chlorine—Control Apparatus; Hypochlorite—Control
Apparatus

Softeners

See Softeners—Water

Supply Systems—Hydro-pneumatic or Storage

Deming Co. 24/30
Goulds Pumps, Inc. 24/31
Marvel 24/30
Myers, F. E., & Bro. Co. 24/32
Oil-Rite 24/30
Westco Pump Corp. 24/34

Supply Systems—Non-storage

Myers, F. E., & Bro. Co. 24/32

Temperature Regulators

See Controllers—Temperature

Waterproof

Lime

See Lime—Waterproof

Waterproofing

Admixtures

Accello 4/2
Anti-Hydro Waterproofing Co. 4/2
Aquabar Waterproofing Products, Inc. 4/3
Aquatite 4/3
B.C.C. 4/6
Building Chemicals Corp. 4/6
Flamingo 3/40
Horn, A. C., Co. 4/9
Hydrocide 4/18
Hydratite 4/9
Loomis, W. H., Talc Corp. 4/11
Loomite 4/11
Master Builders Co. 4/13
Nevins, Oscar W., Co., Inc. 4/14
Omicron Pozzoloth 4/13
Quick Set 4/3
Rex 14/25
Riverton Lime & Stone Co., Inc. 3/40
Sonneborn, L., Sons, Inc. 4/18
Staybrite 4/9
Sureseal 4/14
Trimix 4/18
Truscon Laboratories 4/21
See also 14/20; 14/25
Specifications 4/3; 4/21

Asphaltic

See Waterproofing—Paint and Compounds; Asphalt, etc.

Cement Coating

Accello 4/2
Anti-Hydro Waterproofing Co. 4/2
Aquabar Waterproofing Products, Inc. 4/3
Artstone Rocor Corp. 16/6
B.C.C. 4/6
Building Chemicals Corp. 4/6
Cementex 4/3
Elasticote 4/3
Horn, A. C., Co. 4/9
Hornrock 4/9
Medusa Portland Cement Co. 3/38
Nevins, Oscar W., Co., Inc. 4/14
Par-Lock 4/23
Rocor 16/6

(Continued in Next Column)

Waterproofing—Cont.

Cement Coating—Cont.

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Staybrite 4/9
StoneTex 4/21
Sureseal 4/14
Symentrex 4/9
Truscon Laboratories 4/21
Vortex Mfg. Co. 4/23
Specifications 16/6

Combination Metal Sheet, Asphalt, Felt, etc.

American Brass Co. 8/1
Anaconda 8/1
Brisk Waterproofing Co. 4/5
Copperclad 8/1
Electro-Sheet 8/1
Larson 4/5
Specifications 4/5

Composition Slab or Sheet

Flintkote Co. 8/6
Safe-T-Plank 8/6

Contractors

Allied Pneumatic Services, Inc. 1/2
Anti-Hydro Waterproofing Co. 4/2
Brisk Waterproofing Co. 4/5
Building Chemicals Corp. 4/6
Horn, A. C., Co. 4/9
Larson 4/5
Master Builders Co. 4/13
Minwax Co., Inc. 4/12
Nevins, Oscar W., Co., Inc. 4/14
Obelisk Waterproofing Co. 4/15
Sonneborn, L., Sons, Inc. 4/18
Standard Waterproofing Corp. 4/19
Specifications 4/5

Felt, Cloth and Fabric, etc.

All-Rag 8/2
Asbestile 8/7
Barber Asphalt Co. 8/2
Barrell, William L., Co., Inc. 8/20
Barrett Co. 8/3
Bird & Son, Inc. 8/4
Brisk Waterproofing Co. 4/5
Carey, Philip, Co. 8/5
Celotex Corp. 13/16
Cheney Co. 8/50
Con-Ser-Tex 8/20
Copper Armored Sisalkraft 13/1
CopperKote 8/50
Ferox 13/16
Genasco 8/2
J-M 8/7
Johns-Manville 8/7
Koppers Products Co. 8/8
Larson 4/5
Minwax Co., Inc. 4/12
Neponset 8/4
Ruberoid Co. 8/18
Sisalkraft Co. 13/1
Spando 8/50
Specifications 4/5; 4/12; 8/3; 8/7; 8/8; 13/1

Integral

Adensite Co., Inc. 4/1
Anti-Hydro Waterproofing Co. 4/2
Aquabar Waterproofing Products, Inc. 4/3
Aquagel 4/16
Aquatite 4/3
B.C.C. 4/6
Building Chemicals Corp. 4/6
Compound No. 1 4/3
Cretemix "B" 4/22
Horn, A. C., Co. 4/9
Hydratite 4/9
Hydrocide 4/18
Konkerit 4/20
Leakproof 4/13
Loomis, W. H., Talc Corp. 4/11
Loomite 4/11
Master Builders Co. 4/13
Medusa Portland Cement Co. 3/38
Merco 16/21
Merkin, M. J., Paint Co., Inc. 16/21
Mortaron 4/3

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Waterproofing—Cont.

Integral—Cont.

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Nevins, Oscar W., Co., Inc.	4/14
R.I.W.	4/20
Silica Products Co.	4/16
Solvay Sales Corp.	4/17
Sonneborn, L., Sons, Inc.	4/18
Standard Waterproofing Corp.	4/19
Stanwaco	4/19
Staybrite	4/9
Stearate	4/1
Stearox "30"	4/13
Sureseal	4/14
Toch Brothers Inc.	4/20
Toxement	4/20
Tox-Mix	4/20
Tremco Mfg. Co.	4/22
Truscon Laboratories	4/21
See also	14/20
Specifications	4/1; 4/2; 4/3; 4/13; 4/21

Iron Method

Aquabar Waterproofing Products, Inc.	4/3
B.C.C.	4/6
Building Chemicals Corp.	4/6
Ferritex	4/21
Ferrocon	4/3
Horn, A. C., Co.	4/9
Ironco	4/3
Master Builders Co.	4/13
Metallic	4/13
Metalon	4/9
Nevins, Oscar W., Co., Inc.	4/14
Sureseal	4/14
Truscon Laboratories	4/21
Specifications	4/21

Lime

See Lime—Waterproofed

Membrane Method

See Waterproofing—Paint and Compounds; Waterproofing—Felt, Cloth and Fabric

Paint and Compounds

(For Surface Treatments or for use with Membrane Systems)

A.C.E.	16/15
Adensite Co., Inc.	4/1
Allied Pneumatic Services, Inc.	1/2
Amur seal	4/2
Anti-Hydro Waterproofing Co.	4/2
Antydamp	16/29
Aquabar Waterproofing Products, Inc.	4/3
Aquaseal	16/21
Aridclear	4/2
Aridtite	4/2
Art-Roc	4/21
Artstone Rocor Corp.	16/6
B.C.C.	4/6
B-T	15/9
Barber Asphalt Co.	8/2
Barrett Co.	8/3
Berry Brothers, Inc.	16/8
Billings-Chapin Co.	4/4
Bird & Son, Inc.	8/4
Bondex	16/28a
BriXope	4/6
Building Chemicals Corp.	4/6
Cabot, Samuel, Inc.	4/7; 16/9
Cemcoat	16/4
Cementex	4/3
Cementhide	17/1
Cem-Gard	16/13
Clear Coat	4/3
Clerseal	4/1
Cork Import Corp.	13/42
Degraco	16/13
Dehydratine Nos. 1, 2, 2A, 3, 4, 10	4/9
Dens-tect	4/23
Detroit Graphite Co.	16/13
Drivall	4/4
du Pont de Nemours, E. I., & Co., Inc.	16/15
Elastic	4/10
Elasticote	4/3
Elastigum	8/3
Flintkote Co.	8/6

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Waterproofing—Cont.

Paint and Compounds—Cont.

(Continued from Previous Column)

Genasco	8/2
Hetzel Roofing Products Co.	8/54
Horn, A. C., Co.	4/9
Hornrock	4/9
Hydrocide	4/18
Hydronon	8/3
Insulkote	13/39
Johns-Manville	13/39
Kaukit	4/18
Klere-Seal	3/42
Konkerit	4/20
Koppers Products Co.	8/8
Kuhls, H. B., Fred	4/10
Lastphalt	15/9
Leakproof	4/13
Lionoil	16/8
Marine Cement No. 3A	4/3
Master Builders Co.	4/13
Masterseal	4/13
Mastertex	4/13
Mastic Insulite Cement No. 4	4/3
Maximent Co.	15/9
Medusa Portland Cement Co.	3/38
Merco	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Metalon	4/9
Minwax Co., Inc.	4/12
Neponset	8/4
Nevins, Oscar W., Co., Inc.	4/14
Obelisk Waterproofing Co.	4/15
Omicron	4/13
Par-Lock Plaster Key	4/23
Pecora Paint Co., Inc.	3/42
Pittsburgh Plate Glass Co.	17/1
Plastic XC	8/3
R.I.W.	4/20
Reardon Co.	16/28a
Ric-wil	26/97
Rocor	16/6
Ruberoid Co.	8/18
Self Healing Bridge Cement	4/20
Semi-Mastic	4/3
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	4/18; 16/4
Standard Waterproofing Corp.	4/19
Stanwaco	4/19
Static	8/6
Stearox "30"	4/13
Stone Backing No. 3B	4/3
StoneTex	4/21
Stonewall Plastic	13/42
Stuccotex	4/21
Sureseal	4/14
Symtrex	4/9
Tar-Rok	8/3
Toch Brothers, Inc.	4/20
Toxloxpore	4/20
Tremco Mfg. Co.	4/22
Tremco-101	4/22
Trimix	4/18
Truscon Laboratories	4/21
Vortex Mfg. Co.	4/23
Wallhide	17/1
See also	9/23
Specifications	4/3; 4/4; 4/7; 4/12; 4/13; 4/18; 4/21; 4/23; 8/3; 8/8; 16/6; 16/8; 16/9; 16/28a; 16/29; 17/1

Pre-Formed Unit

See Waterproofing—Combination Metal Sheet, Asphalt, Felt, etc.; Waterproofing—Felt, Cloth and Fabric

Protective Coatings

See Waterproofing—Felt, Cloths, Fabric, etc.

Transparent

Adensite Co., Inc.	4/1
All-Weather	4/13
Anti-Hydro Waterproofing Co.	4/2
Aquabar Waterproofing Products, Inc.	4/3
Aridclear	4/2
B.C.C.	4/6
Building Chemicals Corp.	4/6
Cabot, Samuel, Inc.	4/7
Clear Coat	4/3
Clerseal	4/1

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Waterproofing—Cont.

Transparent—Cont.

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<i>Degraco</i>	16/13
<i>Dehydratine No. 2 and 2A</i>	4/9
Horn, A. C., Co.	4/9
<i>Hydrocide</i>	4/18
<i>Klere-Seal</i>	3/42
Kuhls, H. B. Fred	4/10
Master Builders Co.	4/13
<i>Masterseal</i>	4/13
Merco	16/21
Merkin, M. J., Paint Co., Inc.	16/21
Minwax Co., Inc.	4/12
Nevins, Oscar W., Co., Inc.	4/14
Pecora Paint Co., Inc.	3/42
Sonneborn, L., Sons, Inc.	4/18
Standard Waterproofing Corp.	4/19
<i>Stanwaco</i>	4/19
<i>Super-Por-Seal</i>	4/21
<i>Suresal</i>	4/14
Tremco Mfg. Co.	4/22
<i>Tremco-141</i>	4/22
Truscon Laboratories	4/21
See also	14/20; 16/13
Specifications	4/12; 4/13; 4/18

Wax

Floor—Paste or Liquid

(See also Polish)

<i>Amalie</i>	16/4
Armstrong Cork Products Co.	15/44
<i>Art-Roc</i>	4/21
Berry Brothers, Inc.	16/8
<i>Berrycraft</i>	16/8
Bruce, E. L., Co.	15/51
du Pont de Nemours, E. I., & Co., Inc.	16/15
<i>Glastex</i>	4/3
<i>Hil-Brite</i>	16/2
<i>Hil-Kote</i>	16/2
Hillyard Chemical Co.	16/2
<i>Hil-Tone</i>	16/2
<i>Kay-Brite</i>	16/1
<i>Linogloss</i>	15/44
Minwax Co., Inc.	4/12
<i>Old Faithful</i>	16/1
Pittsburgh Plate Glass Co.	17/1
Sherwin-Williams Co.	16/29
Sonneborn, L., Sons, Inc.	16/4
Truscon Laboratories	4/21
<i>Tuf-Lustre</i>	15/51
<i>Waterspar</i>	17/1
<i>Waterspar Polishing</i>	17/1
Specifications	16/8; 16/15; 16/29; 17/1

Linoleum

Armstrong Cork Products Co.	15/44
<i>Linogloss</i>	15/44

Weatherstrips

Metal—for Double Hung Windows, Casements, Doors, Transoms, etc.

Accurate Metal Weather Strip Co.	19/13
<i>Adjusto-Seal</i>	19/20
Andersen Frame Corp.	11/14
Athey Co.	19/14
Barland Weatherstrip Material Co.	19/15
<i>Ceco</i>	3/69
Chamberlin Metal Weather Strip Co., Inc.	19/16
Concrete Engineering Co., Inc.	3/69
<i>Flexo-Seal</i>	19/20
Higgin Mfg. Co.	19/6
<i>In-Dor-Seals</i>	19/16
<i>Knight-Triple-Interlocking</i>	19/15
Master Metal Strip Service	19/17
<i>Pine Craft</i>	11/19
Protex Weatherstrip Mfg. Co.	19/19
Pyramid Metals Co.	19/18
Reese Metal Weather Strip Co.	19/20
<i>Sill-Dor-Seals</i>	19/16
<i>Slide Lock</i>	3/69
Spanjers, A. J., Co.	19/21
Unique Balance Co., Inc.	18/6
White Pine Sash Co.	11/19
See also	19/1; 19/2; 19/8
Specifications	19/13; 19/19; 19/20

Weatherstrips—Cont.

Threshold Combination

(See also Door—Bottoms)

Accurate Metal Weather Strip Co.	19/13
Barland Weatherstrip Material Co.	19/15
<i>Beauty-Tread</i>	19/15
Chamberlin Metal Weather Strip Co., Inc.	19/16
Master Metal Strip Service	19/17
<i>Perfec-Seal</i>	19/20
Pyramid Metals Co.	19/18
Reese Metal Weather Strip Co.	19/20
<i>Sill-Dor-Seals</i>	19/16
Spanjers, A. J., Co.	19/21
<i>Super-Seal</i>	19/15
See also	19/2; 23/19; 23/23
Specifications	19/13

Weathervanes

Metal

Jones, Harold K., Co.	27/19
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Welding

Accessories and Supplies

Linde Air Products Co.	26/94
<i>Oxweld</i>	26/94
<i>Prest-O-Lite</i>	26/94
Specifications	26/94

Filler Metal

American Rolling Mill Co.	8/40
<i>Armco</i>	8/40
<i>Enduro</i>	7/10
<i>Plumrite</i>	24/2
Republic Steel Corp.	7/10
<i>Toncan</i>	7/10
See also	24/2

Whistles

Signal—Steam or Air

Signal Engineering & Mfg. Co.	29/7
<i>Wheelock</i>	29/7

White

Lead

See Lead—White

Wickets

Bank Grilles

See Grilles—Bank

Winches

Electric, Gasoline, etc.

See Hoists

Wind

Direction Indicators and Recorders

See Weathervanes

Window

Blinds

See Blinds

Casement Hardware for

See Hardware

Cleaners' Safety Devices

A. B. Window Safety Devices Inc.	18/11
Acker & Man, Inc.	18/12
Harrison-Weise Co.	18/13
<i>H-W 4-Bolt</i>	18/13
<i>Morewood</i>	18/34
See also	25/41

Controls

See Hardware—Window

Fixtures—Balances

See Windows—Reversible

Fixtures—Reversible

See Windows—Reversible

Frames—Wood

See Frames—Window; Trim

Glass

See Glass

Window—Cont.

Guards

See Guards—Door and Window

Opening Devices

See Sash—Operating Devices

Reveal Casings

See Casings—Window—Metal

Sash Balances

See Balances—Sash

Sash Chain

See Chains—Sash

Sash Cord

See Cord—Sash

Screens

See Screens—Insect

Shade Cloth

See Shades—Window—Cloth or Fabric for

Shade Rollers

See Shades—Window—Rollers for

Shades

See Shades

Shades—Ventilating

See Shades—Window, Skylight, etc.—Ventilating;
Blinds—Venetian

Shutters

See Doors—Sheet Steel

Strips

See Weatherstrips—Metal—for Double Hung Windows,
Casement, Doors, Transoms, etc.

Windows

Aluminum

<i>Alumex</i>	11/8
Bayley, William, Co.	11/2
Crittall Manufacturing Co., Inc.	11/4
Detroit Steel Products Co.	11/5
<i>Fencraft</i>	11/5
<i>Fenestra</i>	1/5
<i>Fenmark</i>	11/5
Herrmann & Grace Co.	11/8
Hope's Windows Inc.	11/9
Kawneer Co.	11/10
<i>Peerless</i>	11/12
Pomeroy, S. H., Co., Inc.	11/7
<i>Sealair</i>	11/10
<i>Superior Type</i>	11/7
Truscon Steel Co.	11/12
See also	7/14; 11/3
Specifications	11/7; 11/10

Art Glass

Payne-Spiers Studios, Inc.	17/9
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Balanced—Pivoted

<i>Cotswold</i>	11/9
<i>H-D</i>	11/11
Hope's Windows Inc.	11/9
Mesker Bros. Iron Co.	11/11
Truscon Steel Co.	11/12
Specifications	11/9; 11/11

Balanced—Pivoted—Fixtures for

Austral Sales Corp.	18/32
Specifications	18/32

Basement

Andersen Frame Corp.	11/14
Bayley, William, Co.	11/2
<i>Ceco</i>	3/69
Concrete Engineering Co., Inc.	3/69
Detroit Steel Products Co.	11/5
Donley Brothers Co.	26/104
<i>Fenestra</i>	11/5
Milcor Steel Co.	25/27
<i>Red Top</i>	8/10
Truscon Steel Co.	11/12
<i>USG</i>	8/10

Basement—Wood Frames for

See Frames—Window—Wood

Windows—Cont.

Bronze

Bayley, William, Co.	11/2
Crittall Manufacturing Co., Inc.	11/4
Detroit Steel Products Co.	11/5
<i>Fencraft</i>	11/5
<i>Fenestra</i>	11/5
<i>Fenmark</i>	11/5
Gorham Co.	7/17
Hope's Windows Inc.	11/9
Kawneer Co.	11/10
<i>Peerless</i>	11/12
Penn Brass & Bronze Works.	7/22
Pomeroy, S. H., Co., Inc.	11/7
<i>Sealair</i>	11/10
<i>Superior Type</i>	11/7
Truscon Steel Co.	11/12
See also	7/13; 7/14; 7/16; 7/20; 11/3
Specifications	11/7; 11/10

Burglarproof

See Window—Detention

Casement

Andersen Frame Corp.	11/14
Associated Manufacturers of "Bilt-Well" Mill-work	11/13
Bayley, William, Co.	11/2
<i>Ceco</i>	3/69
<i>Clos-Tite</i>	11/13; 22/2
Concrete Engineering Co., Inc.	3/69
<i>Cotswold</i>	11/9
Crittall Manufacturing Co., Inc.	11/4
Detroit Steel Products Co.	11/5
<i>Econwin</i>	11/9
Farley & Loetscher Mfg. Co.	11/16
<i>Fencraft</i>	11/5
<i>Fenestra</i>	11/5
<i>Fenwrought</i>	11/5
<i>Guildhall</i>	11/11
<i>Halford</i>	11/9
Hope's Windows Inc.	11/9
<i>Hopkins</i>	11/9
Kawneer Co.	11/10
Mesker Bros. Iron Co.	11/11
<i>Metropolitan</i>	11/11
<i>Norman</i>	11/4
<i>Normandy</i>	11/19
<i>Paramount</i>	11/12
<i>Pine Craft</i>	11/19
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**S P E C I A L
S E R V I C E S
- S E C T I O N -**

1

CATALOGS 1 to 4

THE PRODUCERS' COUNCIL

INCORPORATED

Affiliated with

THE AMERICAN INSTITUTE OF ARCHITECTS

19 West 44th Street
NEW YORK, N. Y.

JOHN F. GOWEN
Executive Secretary

The Council and Its Membership

THE PRODUCERS' COUNCIL, INCORPORATED, is a national organization of manufacturers and associations of manufacturers of building materials and equipment. All responsible American manufacturers of quality building products, who are in sympathy with the aims of The Council and otherwise meet the membership requirements, are welcomed to membership.



try, give manufacturers of quality products an influential voice in dealing with problems vital to their interests and to the welfare of the industry.

Producers' Council Clubs

Producers' Council Clubs have been organized in several large cities to promote locally the objects of The Council. They function under regulations of the national body. Membership is confined to representatives of Council members.

The Clubs promote better acquaintance and closer co-operation between member representatives, architects, engineers and local building interests. They provide facilities for study of mutual problems, promote mutual welfare and better understanding of the qualifications and economic use of quality products. A steady growth of interest on the part of architects and producers evidences the valuable service these clubs render to both members and allied building interests.

On the following page is a list of the Clubs already organized.

As Council membership increases and local need indicates additional Clubs will be organized with consequent increasing benefit to all concerned.

Community of Interest

The Council recognizes the common interest that embraces all factors of the building industry. Through its affiliation with the American Institute of Architects and the Construction League, and with growing interest and support by responsible manufacturers it is admirably fitted to foster improved conditions in the industry and better service to the public.

Objects of the Council

(1) To promote better mutual understanding between architects, engineers, contractors and producers of building materials.

(2) To make more effective the services rendered by each in relation to the others and to the public.

(3) To promote every legitimate interest of producers of building materials and equipment.

(4) To establish and maintain standards in building which will encourage the production of dependable materials, good construction, meritorious architecture and sound trade practices.

Facilities for Carrying Out Its Objects

All activities of the Council are directed towards attainment of these objectives. The Council provides facilities for discussion of mutual problems and for constructive action toward their solution by periodic meetings of the members; through the Council Office, through joint activities and meetings with other organized groups in the building field; and through local Council Clubs.

Affiliation of The Council with the American Institute of Architects and membership in the Construction League, representing all elements of the construction indus-

TEN PRINCIPLES OF BASIC POLICY

Adopted by The Producers' Council at Its Seventh Semiannual Meeting, Oct. 28, 1930

(1) That business only will endure, whose product is essential, and which is founded on the broad conception of service to, not exploitation of, the customer.

(2) Such a product and such service are entitled to a fair return. To justify this requires that standards of quality in manufacture and service be maintained and their improvement striven for constantly.

(3) Cordial patronage often depends upon the customer's sense of free choice in selecting materials and services.

(4) Extravagant claims regarding product performance tend to provoke from others similar claims of contradictory import, tending to confuse the consumer and destroy his confidence.

(5) Inappropriate use of a product reacts eventually to injure a proper esteem of the product for appropriate use. Advertising and sales effort should consider this possibility.

(6) Intelligent advertising and sales effort abstain from reflection upon responsible competitors or disparaging statements regarding their products and services.

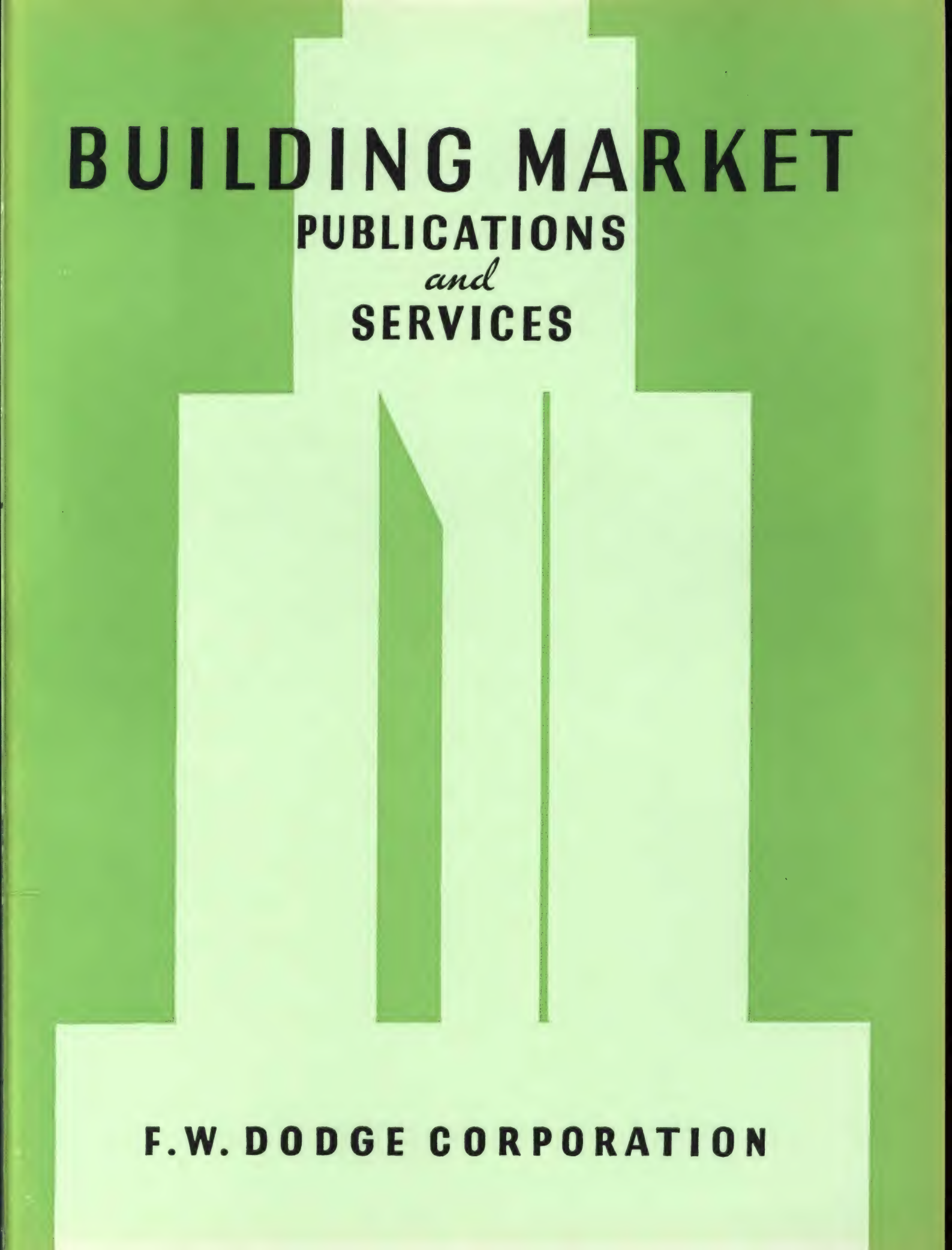
(7) Fair statement of relative merit and the publication of scientific data giving correctly the comparative test findings of a competent impartial authority are admissible where necessary to rightful business and consuming interests.

(8) An individual enterprise is judged largely by the general reputation of the industry of which it is a part. In discouraging unworthy competition remember to uphold the good reputation generally of the building material and appliance industry.

(9) Sympathetic co-operation with the professions of architecture and engineering, and with responsible elements in the contracting field, is essential to maintain proper standards in construction and materials.

(10) Departure in any instance from these principles should not necessarily be construed as wilful. Give others the presumption of fair intent and if aggrieved strive first by frank appeal to remedy rather than retaliation. Reason is the strongest force in human affairs.

MEMORANDA

The background of the cover features a stylized, abstract representation of a building. It consists of several vertical rectangular bars of varying heights and widths, creating a sense of depth and structure. The bars are set against a solid green background, and the overall design is minimalist and modern.

BUILDING MARKET

PUBLICATIONS
and
SERVICES

F.W. DODGE CORPORATION

F. W. DODGE CORPORATION

119 West 40th Street, New York, N. Y.

(For District Offices, see page 23)

FOREWORD

All Dodge publications and services have been designed to serve the needs of architects, engineers, contractors and manufacturers and their representatives by making easier the operations of planning, specifying, contract letting, buying and selling. Each is basically a communication service, to expedite the exchange of information between the professional and the manufacturing groups and between the individual members of each. Their application to the many and varied needs of the building industry is described in the following pages.

Dodge Construction Reports.....	Pages 3 to 11
Home Owners' Catalogs.....	Pages 12 to 13
Dodge Statistical Research Service.....	Pages 14 to 17
The Architectural Record.....	Pages 18 to 19
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DODGE CONSTRUCTION REPORTS

ISSUED BY

F. W. DODGE CORPORATION

119 West 40th Street, New York, N. Y.

(For District Offices, see page 23)

DODGE REPORTS DEFINED

Dodge Report Service is a news service, issued daily, giving all essential facts about construction activity, present and contemplated, on building and engineering projects. It covers the territory east of the Rocky Mountains. This area, the 37 eastern states, normally includes about 91 per cent of the construction volume of the entire country. Dodge Report Service is the only daily building news service that has more than limited local coverage.

Private projects, alterations and additions, and Federal, State, County and Municipal projects of all kinds are reported. Names and addresses of owners, architects, engineers, bidders and contractors are given, together with the location, condition and description of the job.

Each report is issued on an individual slip of paper 6 x 3 7/8 inches. (See Fig. 1). The reports are mailed each evening to subscribers from 13 issuing offices. The service each subscriber receives consists of reports selected by hand to meet the individual needs of those who specify and buy building products and those who sell them. This important and exclusive Dodge feature is described on the next page, under the heading "SELECTIVITY".

HOW NEWS IS COLLECTED

The information issued in Dodge Reports is collected by our own staff of trained news gatherers. This staff of more than 600 persons, the largest reportorial organization of the kind in the country, makes more than 950,400 personal calls and 736,000 telephone calls in gathering news each year. Every item of news is verified prior to release by a responsible person directly connected with the job.

This news comes from some 135,000 sources including owners, real estate brokers, financial institutions, architects, engineers, contractors and other reliable sources. These sources are contacted regularly, some daily. A special corps of reporters spends full time in Washington, keeping in close touch with every Federal department and bureau concerned with construction. A Dodge reporter attends every important bid opening in Dodge territory. Thousands of newspapers are read and checked against our active job files, but no newspaper item is released until all details have been verified.

The news gathered by our reporters is delivered or transmitted by teletypewriter, telephone, telegraph, or fast mail to our issuing offices, where it is edited and immediately released to subscribers. Dodge Reports are dependable.

DODGE REPORTS This report consists of confidential information gathered, prepared and owned exclusively by F. W. Dodge Corporation. Its use in a particular manner is granted by contract. Any other use will be prosecuted.  Home Owners Catalogues Sweets Catalogue Files Architectural Record Building Statistics	"HOME OWNERS' CATALOGS" WAS SENT TO THIS OWNER TODAY		
	Oct 22 1935	2-0	Chgo 19DD #141518
	SKETCHES COMPLETED-READY TO START WORKING DRAWINGS		
	RESIDENCE (00) \$10,000		
	DELAWARE CO IND-3 Mi E of Muncie in Elliott Acres Sub Division		
	OWNER - James E Kennedy (Insurance Agency) 115 S Mulberry St (Res) 1003 W Gilbert St Both Muncie Ind		
	ARCHT - Herbert F Smenner Washington Bldg Muncie Ind Brk Ven-2 stys & base-34x39-incls 8 rms-2 baths & lavatory		
	Asphalt shingle rfg-gas fired htg system-concr fdns-tile baths-pine flrs		

Fig. 1—By means of Dodge Reports, those who supply materials and services know which architects, engineers and general contractors have need for information and figures, and just when they need it. A typical Dodge Report, exact size, is illustrated above.

HOW ARCHITECTS BENEFIT

It is natural that architects should have been quick to see the advantages of giving Dodge reporters news of their projects. By giving this news to Dodge, they are able without cost to advise the industry about the work in their offices. By doing this, not only do they save numerous sales calls that would otherwise be made upon them, but also they learn of new materials and methods specially adapted to work on their boards. Indeed, if this news were withheld, the architects would have to engage a corps of reception clerks to answer the flood of questions from the host of persons who would call to learn what work an architect was doing.

Quite aside from the personal aspect of the service Dodge renders architects, there is the larger economic view. Perhaps the most important reason why architects profit by giving news to Dodge is because reduction of distribution costs presents one of the most important problems affecting the whole construction industry. The cost of finding out what work there is and who has it is very great. If each manufacturer and contractor had to develop this essential information for himself, each would have to spend the equivalent hundreds of thousands of dollars which Dodge spends. With Dodge doing it for all, we can distribute the information at a small fraction of the initial cost. In this way Dodge makes a major contribution to the reduction of selling costs which means just one thing: lower prices and more building.

SELECTIVITY

The selective method by which Dodge Reports are issued is a chief reason why this news service, established in 1891, has been successful in keeping the professional, technical, structural and manufacturing groups of the construction industry advised of the activities, needs and opportunities occurring from day to day in this far flung industry.

While Dodge Reports give all essential information on construction projects of every kind, and while a complete

series of reports is issued on each project, few organizations have need for all this information. The selective method of issuing was developed in order that the subscriber would receive only the reports needed and so know just which architects to see. This selectivity is accomplished by a selective service form which the subscriber checks. (See form on page 11 of this catalog.) Reports are selected as to (1) location of project, (2) type of project, (3) construction status of project, (4) valuation of project, and (5) sub-contract information.

DODGE REPORTS

"HOME OWNERS' CATALOG" WAS SENT TO THIS OWNER TODAY

April 17 1935 1 NY 18 #149786
CONTEMPLATED FOR EARLY FALL-OWNER WILL SELECT ARCHT SOON
RESIDENCE (00) \$9,000
TEANECK NJ (Bergen Co) Standish Road
OWNER - Emmit Johnston 731 W 183rd St NYC
ARCHT - Eric Kaeyer 20 So B'way Yonkers N Y

DODGE REPORTS

"HOME OWNERS' CATALOG" WAS SENT THIS OWNER ON APRIL 17TH

June 28 1935 2 NY 9 #149786 A
PLANS IN PROGRESS-ARCHT WILL
HAVE PLANS READY FOR FIGURING GC SOON
RESIDENCE (00) \$9,000
TEANECK NJ (Bergen Co) Standish Road
OWNER - Emmit Johnston 731 W 183rd St NYC
ARCHT - Eric Kaeyer 20 So B'way Yonkers N Y

DODGE REPORTS

"HOME OWNERS' CATALOG" WAS SENT THIS OWNER ON APRIL 17TH

July 18 1935 2-3 NY 9 #149786 D
OWNER TAKING BIDS ON GC DUE AT ONCE
RESIDENCE (00) \$9,000
TEANECK NJ (Bergen Co) Standish Road
OWNER - Emmit A Johnston 731 W 183rd St NYC
ARCHT - Eric Kaeyer 20 So B'way Yonkers N Y

DODGE REPORTS

"HOME OWNERS' CATALOG" WAS SENT THIS OWNER ON APRIL 17TH

Aug 16 1935 4-N NY 18 #149786 F
GC AWARDED-WORK STARTS SOON
RESIDENCE (00) \$9,000
TEANECK NJ (Bergen Co) 560 Standish Road
OWNER - Emmit A Johnston 731 W 183rd St NYC
ARCHT - Eric Kaeyer 20 So B'way Yonkers N Y

DODGE REPORTS

"HOME OWNERS' CATALOG" WAS SENT THIS OWNER ON APRIL 17TH

Oct 30 1935 6 NY 18 #149786 I
PLASTERING
RESIDENCE (00) \$9,500
TEANECK NJ (Bergen Co) 560 Standish Road
OWNER - Emmit A Johnston 731 W 183rd St NYC
ARCHT - Eric Kaeyer 20 So B'way Yonkers N Y
Cinder Blk & stucco 2 sty 35x17
Incl 6 rms-1 bath & lavatory and
Detached Garage 1 sty 10x19
GC - BUFFETT & HAZELTON 41 Westervelt Pl
Teaneck NJ

This report consists of confidential information gathered, prepared and owned exclusively by F. W. Dodge Corporation. Its use in a particular manner is granted by contract. Any other use will be prosecuted.

Head Office: 260 Broadway, New York City
Branches: 1000 Market Street, Philadelphia
1000 Market Street, Philadelphia
1000 Market Street, Philadelphia

Fig. 3—A series of reports is issued on each project. Above are shown five in the series issued on a \$9,500 residential project. By means of selective issuing, the subscriber receives only the reports that he needs.



Fig. 2—Issue clerk distributing Dodge Reports into subscriber pigeonholes. Above each one is a card indicating the selective report service to be issued to the subscriber.

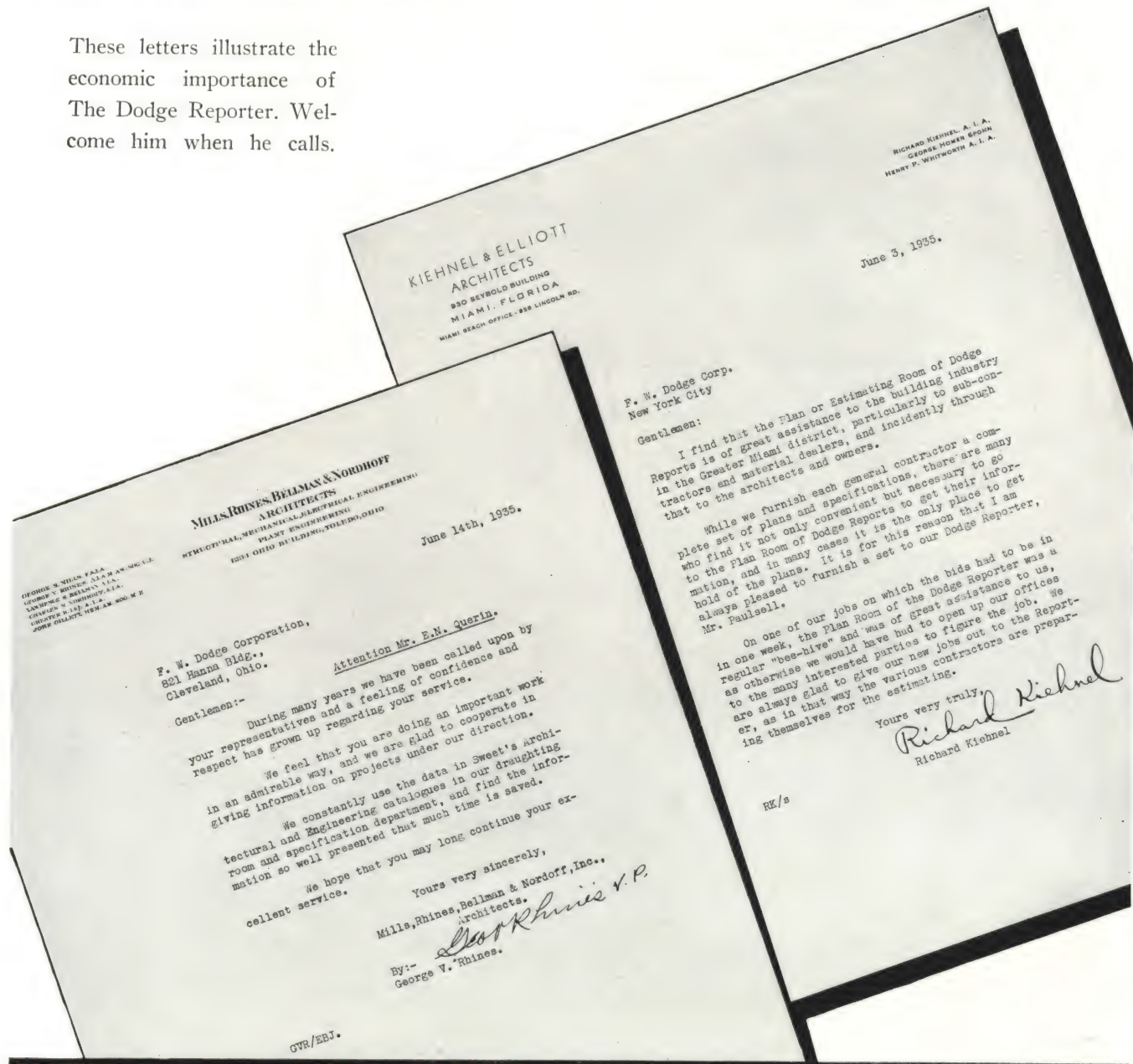
This selectivity saves time and money for everybody, making it easy for those who need each other to get together at the proper time. The general contractor knows which architects to see and when to call. This saves him money, gives him more time on the job, as he spends less time selling. The sub-contractor knows which general contractors are in need of estimates for his trade. The bank vault salesman does not call on the architect who is designing a residence.

Another reason why architects are ready to cooperate with Dodge reporters is because a sympathetic understanding has developed between them and our reporters. They repose confidence in us, and no rule is more rigidly enforced throughout our news gathering staff than that prohibiting the violation of any confidence placed with us by an architect.

But let the architect speak for himself. He knows why Dodge Reports benefit him. On the following pages a few letters from leading architects are reproduced. These letters set forth the reasons why architects find it good business to give news of their work to Dodge reporters.

GIVING NEWS TO DODGE REDUCES DISTRIBUTION AND OVERHEAD COSTS

These letters illustrate the economic importance of The Dodge Reporter. Welcome him when he calls.



Let Us Show You The Letters These Architects Have Written Us:

The Ballinger Company
T. P. Barnett Company
Bley & Lyman
A. Ten Eyck Brown
Childs & Smith
Cameron Clark
Paul A. & Carroll Coletti
Frank Irving Cooper Corp.
Paul Philippe Cret
Delano & Aldrich

Robert O. Derrick, Inc.
John Ebersson, Inc.
Eschweiler & Eschweiler
Gordon & Kaelber
Granger & Bollenbacher
Guilbert & Betelle
Holabird & Root
Wyatt C. Hedrick
Wm. B. Ittner, Inc.
Albert Kahn, Inc.

Kiehnel & Elliott
Knappe & Morris
Kohn, Butler & Stein
Lang & Raugland
Lockwood Greene Engineers, Inc.
McGuire & Shook
Mauran, Russell & Crowell
Mills, Rhines, Bellman & Nordhoff

Geo. B. Post & Sons
George Ernest Robinson
Charles A. Smith
Smith & Senter
Starrett & Van Vleck
Penrose V. Stout
Sturgis Associates, Inc.
Taylor and Fisher
Walker & Weeks
Warren, Knight & Davis
Weiss, Dreyfous & Seiferth

WHY ARCHITECTS GIVE NEWS TO DODGE

Architects and engineers throughout the Dodge territory welcome the Dodge reporter when he calls, and tell him about the work they are doing. They do not do this entirely out of friendliness, nor because Dodge supplies them with Sweet's Catalog File. They realize it is good business for them to give news to Dodge, as shown by the following letters:

From the Office of Paul Philippe Cret

"We have found your reports of real assistance when bids are taken, in bringing inquiries of manufacturers and salesmen at the time when they are most needed to give the information which they alone can furnish. A central news agency saves much time of individual offices in keeping record of the progress of projected work."

From the Office of Holabird & Root

"Believing that Dodge Reports is an excellent medium for the distribution of information to contractors, manufacturers and material men, we have been glad to give you information on projects in which we were interested."

"By giving your service such information, we were relieved of much of the annoyance of personal calls and loss of time through untimely visits of salesmen and contractors' representatives."

"You were particularly helpful in the announcement of bidding dates, the listing of competing contractors and the publishing of contracts awarded. Your Sweet's Catalog File helps us materially in the selection of materials and their application."

"For these reasons, you may continue to expect our fullest cooperation during the coming year."

From the Office of Taylor & Fisher

"We have always felt that Dodge Reports constituted the best medium for keeping architects, engineers, contractors and all those interested in the building trades informed as to developments in the building industry."

"Knowing your conservative policy, we have never hesitated to take your reporters into our confidence in building news, feeling sure that this confidence would never be abused by premature publication, exaggeration or other yellow journal tactics detrimental to our clients' interests."

From the Office of McGuire & Shook

"We are pleased to offer our testimony to the splendid qualities of the service made available to the building industry—in general—by your company."

"The information collected from the architects, by your competent and courteous local representatives, is prepared and disseminated throughout the field in such a way as to insure reliable reports regarding contemplated projects as well as those in progress."

"Your contribution to the advancement of modern building achievements is outstanding."

From the Office of Eschweiler & Eschweiler

"We continue to find Dodge Reports and its representatives a most satisfactory and reliable means of distributing the necessary information of our building projects to contractors and material dealers. The news is given accurately and promptly, and this saves our office force many calls and much correspondence."

"Sweet's Catalog File has proven itself to be of great value as a time saver when looking for necessary and reliable up-to-date information."



Fig. 4—Group of 19 of the Dodge reporters attached to the New York Office. Typical of our news gathering organization throughout the country, each of these men is specifically trained for his work and covers a definite territory. Through long contact they have gained the confidence and friendship of the architects, engineers, contractors and others on whom they call. Welcome the Dodge Reporter when he calls and answer his questions.

OTHER ADVANTAGES THE ARCHITECT GAINS

SPECIAL INQUIRY SERVICE

Architects and engineers find this feature of Dodge Reports as valuable as do Dodge subscribers. During the course of a year, we answer thousands of questions architects ask. These questions pertain to a variety of subjects. The following are typical:

What types of work are the most active now?

How many schools were contracted for in this state last year?

How do wage scales and material prices in Atlanta compare with those current in Chicago?

What jobs do you know of in Fort Wayne on which the architect has not been selected?

What Kansas City contractors handle large building projects?

Can you give me five heating and ventilating contractors in Montreal capable of handling a \$500,000 hospital job?

Who sells the products of X.Y.Z. Manufacturing Company here in town?

Can you give me the name of the maker of the Blank specialty?

Who are the members of the Building Committee for the Main Street Baptist church?

What kind of marble was used for floors in the First National Bank?

Dodge also answers hundreds of questions daily on behalf of architects, thereby conserving their time and relieving them of much bother and many interruptions.

PLAN ROOM SERVICE

Architects are cordially invited to make use of Dodge Plan Rooms. This service has greatly increased esti-

imating convenience and both architects and contractors have benefited. The reasons why Dodge Plan Rooms appeal to architects may be summarized as follows:

Fewer material men and sub-contractors will call at your office wanting to figure jobs. Those who do call may be requested to use the Dodge Plan Room to save congestion in your office.

On jobs to be built in distant cities, the task of securing bids from sub-contractors in those cities is simplified.

When plans are received in a Dodge Plan Room, your interests and those of your client are fully protected.

We do not allow plans to be removed from the Plan Room.

We do not permit any mutilation.

We do not permit general contractors to use our Plan Rooms except at the request of an architect.

We do not interpret plans or specifications to any estimator who may question us.

Any estimator known to represent a reliable firm may examine plans on file.

Plans may be sent to us express collect, or we will send a messenger to your office for them.

After contract is awarded we return plans, with the specifications, to your office.

When having plans blue printed, have one or more sets prepared for Dodge Plan Rooms. Make this standard practice in your office just as hundreds of other architects are doing. Ask the Dodge reporter about this service.



Fig. 5—Plan Room, New York Office of Dodge Reports. Dodge offices in many cities have Plan Rooms. This Plan Room service is popular with both architects and Dodge Report subscribers. It meets the needs and promotes the interests of both at no cost to either.

HOW DODGE REPORTS ARE USED

We do not believe the interest of the architect and engineer, so far as giving news of current work to Dodge reporters is concerned, is limited to the personal advantages they gain by so doing. What happens to their news interests them also, for it is the use of this news that lowers sales expense and, as pointed out earlier, reduces distribution costs and hence promotes construction. Therefore the way in which Dodge Reports are used is important to the architect, as well as to the subscriber.

Dodge Reports are used for three purposes: (1) Field Selling, (2) Direct Advertising, and (3) Sales Control.

FIELD SELLING

Dodge Reports tell the salesman and the contractor whom to see, where to find him, when to see him and what job to talk about. In short, the salesman using Dodge Reports knows an architect has a job in his line before he calls. He gets right down to business, keeps to the subject, and speeds the interview. He does not wander from office to office looking for a chance to tell his story. His employer saves the cost of useless sales calls; the architect is spared the annoyance of such calls. Salesmen learn of jobs early enough to acquaint architects with new products and methods before plans and specifications are completed. Salesmen are enabled to show dealers, particularly on the smaller projects, an immediate market for their products and so gain the active cooperation of local distributors in following up selling opportunities.

DIRECT ADVERTISING

Dodge Reports are coded so that the advertising or sales promotion manager can send pertinent letters or pieces of advertising to the buying factors named on the reports just as specifications are being written and as buying decisions are being made. This timed distribution of letters and advertising is economically handled in an almost routine manner. Duplication of mailings is prevented. Mailings are made only to qualified prospects, so saving the waste and cost of mass, scatter-shot circularization which accomplishes little but fill up the architect's waste basket. Timed advertising benefits everybody.

Timed advertising is also used to secure small orders where it is too costly or impossible to send salesmen. If

salesmen are not employed, timed advertising is used to support the salesmen of agents or distributors, and takes the manufacturer's own sales story direct to prospects. Timed advertising to architects, engineers and general contractors makes a catalog filed in Sweet's more effective as letters calling attention to the catalog may be sent at the time plans are being drawn or when bids are being prepared on a given job.

Timed advertising increases the effectiveness of advertising in The Architectural Record and in other professional journals and business papers, as well as the effectiveness of general advertising. Timed advertising crystallizes the acceptance which other forms of advertising build for a product, and converts this acceptance into orders when buying decisions are being made. The completely equipped Dodge mailing department is prepared to handle timed mailings for Dodge Report subscribers.

SALES CONTROL

When Dodge Reports are used as the basis, simple sales control files on active projects may be set up in home and branch offices, and such files give accurate, clear pictures of the active market, present and near future. If any job is being neglected the neglect becomes evident while there is still time to sell the job. Salesmen or field representatives who are doing the best work, or who need help, or who may have to be replaced, are known. Control files make it possible to keep selling effort adjusted to sales potential by season, by territory, by product.

Control files make accurate sales direction possible on, and insure proper follow up of "split" jobs, that is, jobs where the architect is in one territory, the contractor in another and the job in a third. These files clearly indicate territories where competition is being beaten, or where competition is gaining, and the reasons for the change by types of projects, and by project valuations. In many ways, sales control work helps the manufacturer to cut his costs, with consequent benefit to all.

COORDINATED SELLING

When Dodge Reports are used for the three purposes described, the subscriber gains several advantages through the resulting coordination of all selling forces.



Fig. 6—Boston Office, Dodge Reports, issuing department. Throughout the 37 states east of the Rocky Mountains, Dodge uses the same tested methods for collecting and distributing construction news.

The greatest possible results are secured from advertising due to the close follow up of prospects by the field sales staff. Salesmen's accomplishments are increased because, through coordinated advertising, they have supporting cultivation of all buying factors on each project. The active interest of jobbers and dealers is secured and their effort in local selling parallels that of the manufacturer. The timed combination of all selling effort is much more likely to gain sales at reasonable cost for the product of the Dodge Report subscriber than is the emaciated and scattered application of unrelated efforts by the manufacturer whose selling is neither controlled nor coordinated.

STRAIGHT LINE SELLING

In order that the news collected from architects may be used to the best advantage, we have developed the *New Dodge Method of Straight Line Selling*. This Method includes the use of reports for field selling, direct advertising and sales control. During the last several years it has been thoroughly tested and is now in use by the makers of a variety of building products and equipment, including small, medium sized, and large organizations. Subscribers tell us it is far more efficient than methods they formerly used in eliminating waste and detail in sales follow up. Our representatives and service men are ready to explain the proper use of construction news and how it will solve sales problems in the building field. We invite inquiry.



Fig. 7—Pittsburgh Office, Dodge Reports. The services of many trained workers in each office are required to keep track of all construction work.

COUNTY ISSUE

We have perfected our issuing system to a point where we can now render selective service by county or groups of counties. Distributing reports direct to salesmen, each service covering just the county or counties in each man's territory, and supplying one or more control services to the home and branch offices of the subscriber, eliminates detail and saves time, a vital factor in competitive selling.

To illustrate: Assume a manufacturer has his home office in New York and a branch in Cleveland. The control service for Ohio goes to his New York office where it is used for advertising and sales control purposes. Individual services are mailed by us direct to each of his salesmen, covering selected projects located in the counties comprising the territory of each Ohio salesman. There is no limit to the number of "divided mailings" or county services one manufacturer may use. Suppose he has a man in Cleveland contacting only architects—that man will get a special service. Suppose he has several salesmen in northern Ohio contacting the trade—each one will get a service covering his territory.

Under the old method a single service would have been mailed to the New York office where it would be copied, sorted and relayed to the Ohio salesmen. Or it would have been sent to the Cleveland branch and the home office would have no knowledge of jobs in Ohio. Delay in the old method often resulted in salesmen calling in an effort to secure a change in specifications at a time when such change would be costly.



Fig. 8—Chicago Office, Dodge Reports, reporters' room. Note files wherein work of each architect and other news sources assigned to the reporter is carefully recorded. To prevent errors, each reporter copies his reports on a typewriter.



Fig. 9—Philadelphia Office, Dodge Reports. Because of our ample facilities, long experience and dependable service, thousands of firms look to Dodge for building information of all kinds.

DEPENDABILITY

The news issued in Dodge Reports is verified, dependable information. There are four points upon which to judge a news service: (1) complete coverage of projects, (2) prompt reporting of architects selected, bidders, award of general and sub-contracts, (3) accuracy, (4) job details. Because of our long experience and our large reportorial staff, Dodge Report service by repeated tests has been found superior on each of the four points to any competing service or any combination of such services.

SUPPLEMENTARY SERVICES

Reference has been made to Dodge Special Inquiry Service. This service is of value to the subscriber as well as to the architect. When a sales manager or salesman has need for special last minute information pertaining to a certain job, or seeks facts concerning a rumored job, this service is available. Every day we take care of these situations by answering such questions as:

- Who is the owner, or architect, or engineer, on such and such a job?
- Who is figuring the general contract?
- When are bids on the general contract due?
- Has the general contract been awarded?
- What is to be built on site at (location)?
- Has the sub-contract for (trade) been awarded?



Fig. 11—New Orleans Office, Dodge Reports. Here as in most Dodge offices, Plan Room and Special Inquiry facilities are available.



Fig. 10—Atlanta Office, Dodge Reports. This office, like all other Dodge offices is fully equipped and ready to serve architects and manufacturers with information quickly and efficiently.

Reference has also been made to Dodge Plan Room Service and to Dodge Mailing Service. There is still another service which Dodge renders that is important to subscribers and to architects.

REPRESENTATIVES REGISTER

In many of our offices we maintain a Sales Representatives' Register. This service consists of a listing of manufacturers' names and products, and the names, addresses and telephone numbers of these manufacturers' local sales representatives, so that we may promptly answer the many inquiries we receive from architects, contractors and others who are constantly asking us to tell them who represents a certain product locally. To take advantage of it architects need only to telephone the Dodge office or ask a Dodge Reporter.

DODGE REPORT USERS

Literally thousands of individuals and firms use Dodge Reports. Dodge subscribers represent more than 700 different lines of business. The first firm to sign a contract for Dodge Report service has been a subscriber since October, 1891. Numerous other subscribers have been in uninterrupted service for 30 years and longer.



Fig. 12—Buffalo Office, Dodge Reports. In number of jobs reported, in speed, in accuracy, in job details given, Dodge news is superior.

DODGE SERVES INTERESTS OF ALL

As a national clearing house for construction news, Dodge renders the entire construction industry a service of fundamental importance. This service might be likened to a huge telephone exchange which automatically connects architect, engineer, general contractor, sub-contractor, material man, owner, financing institution and the many other factors involved, putting them in touch with each other at the time their functions must meet in order to complete a project. Distances are shortened, time is saved, delay is avoided, costs are reduced. Were it not for this national system of orderly distribution of news, a chaotic condition would exist, characterized by tremendous duplication of effort, confusion and needless expense. Finally, it should be recalled that each time an architect gives information to a Dodge reporter, he is aiding in the compilation of statistics of the construction industry. Dodge statistics are regarded as authoritative by the Federal Government, the Federal Reserve Banks, the U. S. Chamber of Commerce and the press of the

country. The value of these statistics to the industry and to the public is obvious.

The more widely and the more intelligently Dodge Publications and Services are used, the better will the interests of all be served. Each one of these publications and services has been specially designed to aid those concerned in any way with new construction, and to help them to perform their particular function with less trouble, at lower cost, and greater profit.

Dodge Report service is available for almost any territory desired. The price is very low because we are able to distribute our costs over the thousands of contracts in force. The application of the Dodge Reports Plan for using the service is neither difficult nor costly. Our representatives are sales consultants; they know the construction field through long contact; confidence may be placed in their recommendations. Further information will be cheerfully supplied. Address Dodge Reports, 119 West 40th Street, New York, N. Y.

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—	—	14—Armories—Auditoriums—Rinks—Stadiums																																																																																																																																																														
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—	—	27—Clubs—Lodges—Parish Houses—Gymnasiums																																																																																																																																																														
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—	—	39—Sewers—Gas and Water and Oil Mains—Drainage Ditches																																																																																																																																																														
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Fig. 13—Each Dodge Report subscriber indicates, on the above form, the service desired. The form as checked is followed by the Dodge issuing department, and the subscriber receives a service of selected reports on projects of particular interest to him. With this service, he is able to control his advertising and selling, concentrating his effort on active jobs. He saves money by eliminating useless sales calls and wasteful advertising. The architect benefits because the manufacturer's salesmen do not call, except when the architect has a job on which the manufacturer's product may be used.

HOME OWNERS' CATALOGS

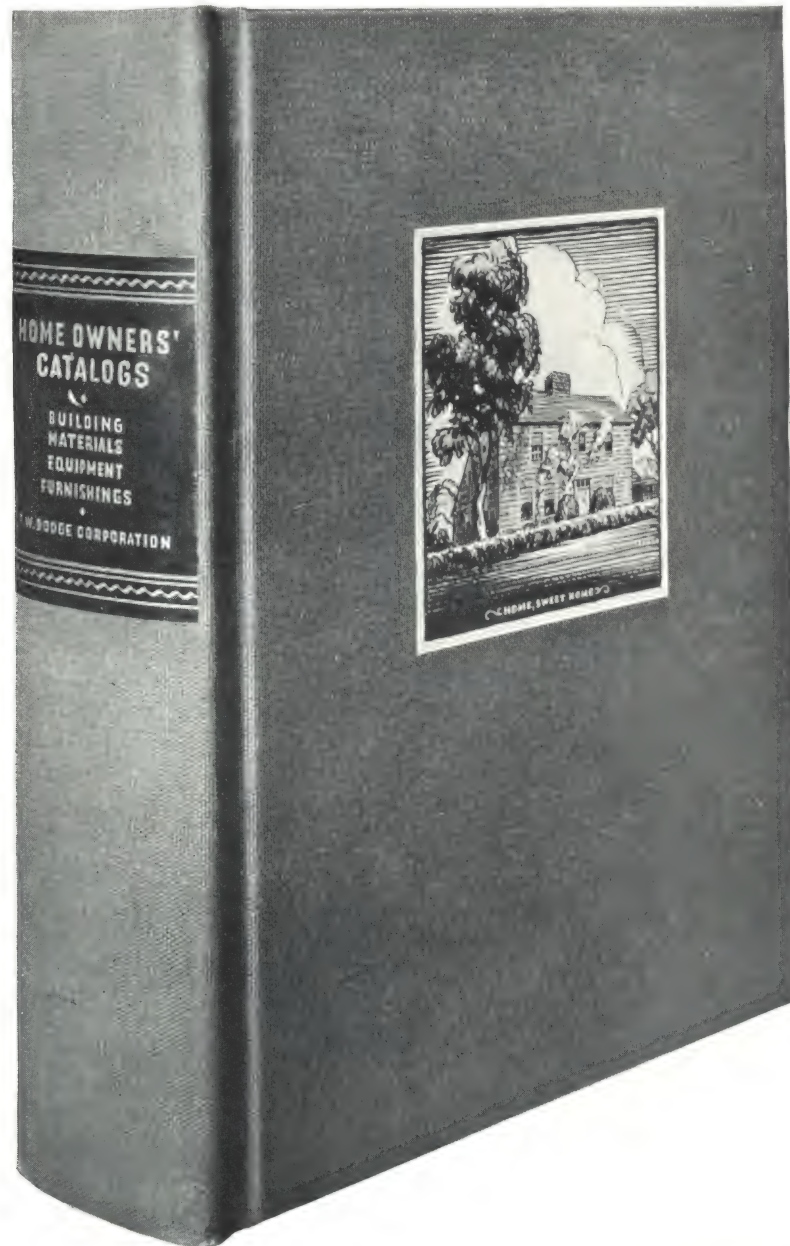
Home Owners' Catalogs is another very important reason why it is to the advantage of the architect to give early and complete information to the Dodge reporter on all "owner occupy" residential projects.

Home Owners' Catalogs is a handsomely bound volume containing the individual catalogs of manufacturers of home building materials, equipment and furnishings. All are written in simple, comprehensive terms which are easily understood by the layman. It is delivered without charge to owners planning, building, or modernizing their own home during the early stages of construction.

From the standpoint of the architect it has the following advantages:

It places manufacturers' literature in the owner's hands at one time. In the present unorganized state of affairs owners receive catalogs at all stages of the project. As a result the owner raises questions at every meeting with the architect and often changes in plans and specifications follow. When we first discover (through following property transfers or through other sources) an owner who is seriously considering building a new home, or when an architect gives us the name and address of his

(Continued on next page)



The Dodge Reports organization spent three years developing Home Owners' Catalogs. It does three things: For the architect it facilitates the handling of residential jobs and their negotiations with their clients. For the owner it supplies needed information at the right time. For the manufacturer it eliminates costly waste.

client while the new house is in the sketch stage or earlier we send Home Owners' Catalogs to that owner with the result that most questions are out of the way before working drawings are started and troublesome changes in plans of specifications are largely avoided.

ENDORSED BY JOHN FUGARD

Home Owners' Catalogs helps owners make decisions. On this point John R. Fugard, Thielbar & Fugard, Chicago architects, writes as follows: "Your new Home Owners' Catalogs appeals to us very much. One of the most difficult things an architect has to do is to get his client to make decisions on the many problems that confront him in building a home. This volume, in our opinion, will assist home owners materially in crystallizing their ideas. The architectural profession as a whole should benefit because of your very strong recommendation to home owners to select a competent architect."

WILL IMPROVE QUALITY OF HOMES

Alfred Granger, Granger & Bollenbacher, declares: "This catalog in circulation among home builders will help the quality of homes to be erected."

Numerous other architects have volunteered similar endorsement. We invite you to examine a copy of Home Owners' Catalogs. Just ask the Dodge reporter to bring a copy to your office.

SPONSORS ARCHITECTURAL SERVICE

In the letter which we send to each owner with Home Owners' Catalogs and in the Foreword as well as in the contents we are doing all within our power to induce owners to retain architects to design and supervise their projects.

The carrying letter states: "To adjust individual ideas to the complete plan, and things to budget, is often a difficult task. It is here that the sympathetic, professionally trained man, the architect, renders vital service. Again, architectural supervision of the home during construction is a safeguard. Architectural service from first to last is true economy."

In the Foreword is the following: "Building a home is more than a romantic experience. Intensely practical aspects are involved, and the satisfaction you derive over the years will depend largely upon the success with which you meet the practical phases of house construction. Of these none is so important as Design and Plan. Design and Plan must be adjusted to your desires, your needs and your budget. The architect, with his special training and experience, is better able to handle this phase of the home building operation than any one else. The builder, too, will serve better when his work follows a carefully worked out solution to the home builder's particular problem."

STOCK PLANS PROHIBITED

We reserve the right of editorial approval of the contents of each individual catalog. We will not accept a catalog which features or recommends stock plans.

Realizing that owners will show the volume to their friends, some of whom will be contemplating new homes or considering changes to existing dwellings, we provide in the volume application forms which persons expecting to build can send us. Thus Home Owners' Catalogs will crystallize desire and promote construction.

USED BY LEADING FIRMS

Among the firms which have contracted for distribution of catalogs through Home Owners' Catalogs: B. Altman & Co., Armstrong Cork Products Co., Athey Co., M. H. Birge & Sons Co., Bryant Heater Co., Burnham Boiler Corp., Philip Carey Co., Celotex Co., Chamberlin Metal Weatherstrip Co., Chase Brass & Copper Co., Congoleum-Nairn, Inc., Crane Co., Detroit Steel Products Co., Donley Bros. Co., du Pont Co., Fiat Metal Mfg. Co., Florida-Louisiana Red Cypress Co., Fox Furnace Co., Gar Wood Industries, Inc., Indiana Limestone Co., Iron Fireman Mfg. Co., Johns-Manville Corp., Johnson Metal Products Co., Kerner Incinerator Co., Kitchen Maid Corp., Libbey-Owens-Ford Glass Co., Lord & Burnham Co., James McCutcheon & Co., McKinney Mfg. Co., The Majestic Co., Masonite Corp., Mid-West Brick Co., N. J. Fence Co., Overhead Door Co., Philadelphia Carpet Co., Pittsburgh Plate Glass Co., Roberts & Mander Stove Co., Rolscreen Co., Sisalkraft Co., U. S. Radiator Corp., Warren Webster & Co., Wayne Oil Burner Corp., Western Pine Association. This listing, while not complete, is a character rating of Home Owners' Catalogs.

LOWERS COSTS

This new development of Dodge Reports is important to architects for the further reason that it lowers manufacturers' costs. Here are the reasons:

- 1—Owners spending \$4,000 or more are covered with job-by-job precision. It goes to no one else. If a job has passed the "Foundations In" stage before name and address of owner is first reported, Home Owners' Catalogs is not sent that owner.
- 2—Issued in 13 editions, each covering a trading area. Manufacturer may limit distribution of his catalog to those editions covering areas wherein he sells, so preventing waste.
- 3—The volume arrives at time owner is seeking information upon which to make decisions.
- 4—It will be retained throughout the life of the job and probably long after.
- 5—It costs manufacturer no more to distribute a 28-page booklet than a four page folder—plenty of space for a complete sales story.
- 6—Manufacturer pays on basis of catalogs actually delivered.

Ask your Dodge reporter to show you a copy. Then make it standard practice in your office to give the Dodge reporter the names and addresses of your residential clients at the earliest possible moment. Doing so will confer a favor upon the client and facilitate the progress of the job through your office.

DODGE STATISTICAL RESEARCH SERVICE

F. W. DODGE CORPORATION

119 West 40th Street, New York, N. Y.

(For District Offices, see page 23)

DODGE STATISTICS — SOURCES

Dodge Statistics are compiled from Dodge Reports issued daily. These reports contain construction information gathered from all available sources (architects, engineers, contractors, development companies, real estate operators, public officials, banks, owners, and so on.) They are mailed daily from 13 Dodge Reports issuing offices to the Statistical Division in New York City constituting, in fact, a daily census of construction. The Statistical Division compiles its statistical data for two stages of construction:

- 1—New construction contemplated.
- 2—New contracts awarded (or work started, in the case of projects carried through without a general contractor).

Statistical tables are divided according to

- 1—Ten general classes and 55 detailed classes of projects.
- 2—Territories—regions, states, counties, metropolitan areas and cities having population of 100,000 and over.

Territorially, the area covered by Dodge Statistics is the same as that of Dodge Reports, the 37 states east of the Rocky Mountains. But the Statistical Division also compiles statistics of building permits for cities in the Rocky Mountain and Pacific Coast territories, index numbers of building costs, records of building wage scales and other data pertinent to the conduct of the industry. The index of building costs is given below:

DODGE INDEX OF BUILDING COSTS
(Base: Year 1926 equals 100)

YEAR	COST INDEX	YEAR	COST INDEX
1900	38	1918	77
1901	39	1919	91
1902	40	1920	120
1903	41	1921	90
1904	40	1922	89
1905	42	1923	98
1906	46	1924	98
1907	48	1925	99
1908	46	1926	100
1909	47	1927	97
1910	49	1928	98
1911	49	1929	100
1912	50	1930	99
1913	50	1931	90
1914	49	1932	83
1915	50	1933	85
1916	58	1934	89
1917	71	*1935	88

*Preliminary

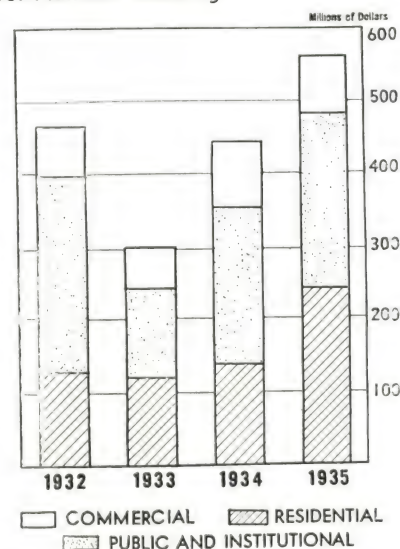
DODGE STATISTICS — USES

Dodge Statistics are used principally in the following ways:

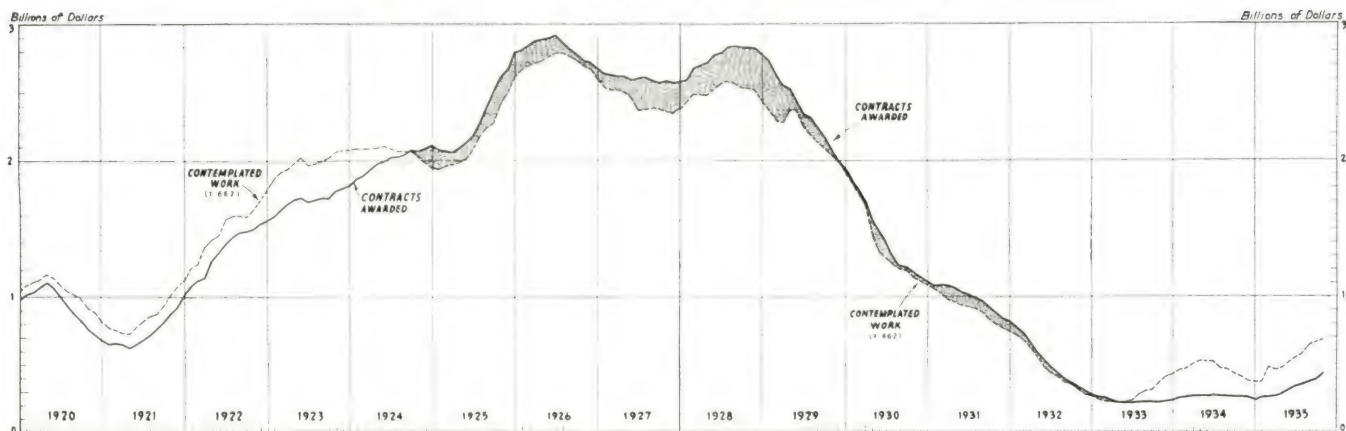
1. To guide the editorial and circulation plans of the Architectural Record.
2. To guide the distribution of Sweet's Catalog Files.
3. To inform architects of economic trends in the industry that are vital to them.
4. To inform the general public and the construction industry as to the relative importance of architects in construction enterprises.
5. To inform the business public, through the daily and trade press, about current trends in construction and their importance in the picture of general business.
6. To furnish bankers, material supply interests, marketing executives, public officials, and all others interested, through regular subscription service bulletins (Dodge Statistical Research Service) of current market trends, in general and in detail, as to classes of work and territories.
7. To make special market and economic studies.
8. To answer special inquiries of architects, bankers, manufacturers, dealers, advertising men, public officials, and others.

Architect-Planned Building

With the improvement in the volume of construction beginning in 1933, there have occurred increased opportunities for the architect. The accompanying chart indicates the volume of architect-planned building in the 37 eastern states since 1932. In 1934 the PWA program was largely responsible for the increases shown for public and institutional building. In 1935, however, residential building again represented the most important field for the architect as indicated on the basis of the record covering the first ten months. Of the \$562,000,000 indicated for the year 1935, approximately \$160,000,000 was for architect-planned single-family dwellings, \$90,000,000 for educational buildings, \$87,000,000 for commercial buildings, \$80,000,000 for apartments and hotels, \$69,000,000 for public buildings, \$50,000,000 for semi-public buildings and \$26,000,000 for institutional buildings.



ACCUMULATING DEMAND FOR RESIDENTIAL BUILDING



Residential building, generally regarded as the pulse of the construction industry which in turn has become the most important single index of industrial recovery, has shown evidence of accumulating demand during the past two years. This evidence of increasing demand is indicated in the accompanying chart which was constructed for the purpose of showing periods of accumulating demand as well as periods of accumulating surpluses. The present period of increasing demand for new housing accommodations began in July 1933 and has continued without interruption since then.

The story told by the chart might be summarized as follows: throughout 1920 and extending until October 1924 there was a period in which the rate of building activity did not keep pace with the volume of new work planned. Within this period occurred the 1920-1921 depression. Anyone using this chart as an indicator at that time would have recognized that the decline was destined to be short-lived because of the accumulative backlog of building demand which had been built up previously and which was actually continuing throughout the decline. This period of accumulating

demand started in 1917. The previous period of residential building surplus extended from 1914 to 1917. From October 1924 to July 1933 there appears an extended shaded area. This was the period of accumulating residential surpluses. The chart suggests how unreasonable was the expansion which occurred in 1925 and 1926 and again in 1928.

The method of constructing this maladjustment chart is based upon what is known as the 12-months' moving total. This method consists in plotting each point so that it represents the total for the 12 months ending with the month plotted. The data for both contracts awarded and contemplated work are regularly published in the Dodge Statistical Research Service. It is necessary, however, to deflate the volume of contemplated construction because not all work planned matures into actual construction. In the case of residential building the amount of correction necessary is indicated in the chart. Such a chart represents one method by which it is possible to recognize periods of increasing demand for building as compared with periods of potential building surpluses.

CONSTRUCTION CONTRACTS AWARDED IN THE 37 EASTERN STATES (as reported by the Dodge Field Staff and recorded by Dodge Statistical Research Service)

Year	Commercial Buildings	Factories	Educational Buildings	Hospitals & Institutions	Public Buildings
1925	\$872,443,700	\$326,613,100	\$426,385,800	\$111,050,200	\$ 54,519,800
1926	920,890,500	471,249,900	381,078,200	133,101,900	67,220,300
1927	932,911,300	375,910,000	379,795,700	162,475,000	79,467,600
1928	884,609,600	508,840,300	398,997,300	164,728,200	76,244,600
1929	929,188,400	545,861,500	381,908,000	152,203,700	120,777,900
1930	628,809,500	256,632,500	376,051,200	163,120,600	139,814,600
1931	311,105,800	116,157,000	228,777,000	121,193,300	181,266,600
1932	122,718,200	43,490,900	82,307,500	48,353,000	117,982,500
1933	99,371,200	127,517,100	39,950,400	37,252,100	50,908,300
1934	150,595,800	116,078,600	117,503,200	37,308,800	55,672,000
*1935	160,000,000	100,000,000	95,000,000	33,000,000	90,000,000

Year	Religious & Memorial	Social & Recreational	Residential Buildings	Pub. Wks. & Pub. Util.	Total Construction
1925	\$153,073,500	\$248,663,700	\$2,747,729,500	\$1,065,947,000	\$6,006,426,300
1926	148,779,700	247,122,000	2,671,120,300	1,340,351,900	6,380,914,700
1927	156,491,000	260,714,100	2,573,316,900	1,381,973,500	6,303,055,100
1928	127,947,400	214,120,800	2,788,317,400	1,464,480,500	6,628,286,100
1929	106,111,200	140,019,400	1,915,727,500	1,458,992,900	5,750,790,500
1930	92,837,100	113,298,400	1,101,312,500	1,651,238,200	4,523,114,600
1931	53,099,600	98,746,500	811,388,700	1,171,115,000	3,092,849,500
1932	27,255,000	38,682,500	280,067,900	590,301,200	1,351,158,700
1933	17,668,600	31,056,000	249,262,100	602,722,600	1,255,708,400
1934	18,298,900	47,574,500	248,840,100	751,236,500	1,543,108,400
*1935	24,000,000	48,000,000	460,000,000	620,000,000	1,630,000,000

*Estimated totals based upon the record for the first ten months 1935.

DODGE STATISTICAL RESEARCH SERVICE

A complete picture of the construction industry is presented by the 11 different series of bulletins comprising the entire subscription service. This picture includes the following features:

- a. Fundamental data (monthly) of new building and engineering contracts awarded east of the Rocky Mountains (37 Eastern States) giving number of projects, number of buildings, new floor space in square feet and total value.
- b. Construction contracts (monthly) classified according to 55 separate and distinct classes of construction based upon the use for which the new project is intended.
- c. Complete building and engineering statistics (monthly)—both new construction started and new projects contemplated for each of the 13 major trading areas applicable to the building field in the 37 Eastern States.
- d. Building and engineering statistics (monthly) by major classes, separately for each of the 37 states, the 94 largest cities in those states, and the 11 most important county divisions.
- e. Comprehensive review (monthly) of significant construction trends apparent in each of the 13 trading areas. This review includes quarterly estimates or forecasts of the construction volume expected to mature in each of the trading areas—divided according to general classes.
- f. Building charts simplified and readily understandable, showing trends of construction volume by classes in each trading area—bar charts showing comparative construction volumes during the past 7 years for 8 major construction classes—new charts comparing contracts awarded with projects contemplated giving a picture of building demand.
- g. Commodity studies showing the inter-relationship between trends of specific commodities and building market trends.
- h. Supplementary building reports (3-times-a-month) giving intermediate building data in advance of regular monthly bulletins.

TERRITORIAL SERVICE

For a regional business the complete building record for specific sales territories is provided through the territorial feature of the service. The user wastes no time or effort in compiling the facts for the Dodge trading areas. The information needs of regional manufacturers and district sales organizations have played a most important part in setting up the DODGE STATISTICAL RESEARCH SERVICE. The service may be purchased either as an entire unit or separately by territories.

SPECIAL STUDIES

Special service bulletins issued to subscribers in 1935 have covered the following subjects:

1. Tracking Down Recovery in Residential Building
2. Tracking Down Recovery in Factory and Commercial Building
3. Tracking Down Recovery in Public and Institutional Building
4. Tracking Down Recovery in Public Works and Utilities Construction

DODGE STATISTICAL RESEARCH SERVICE

119 WEST 40th STREET, NEW YORK, N. Y.
Based on F. W. Dodge Corporation's daily census of building and engineering projects planned and started
September, 1933

37 EASTERN STATES

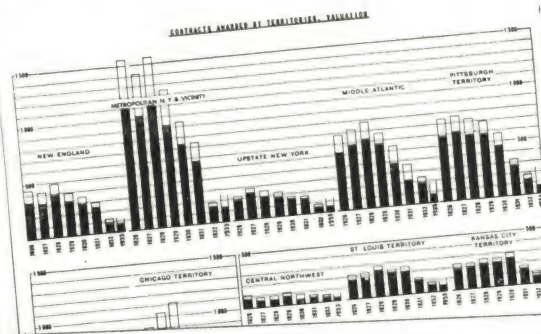
SEPTEMBER CONTRACTS SHOW FURTHER LARGE GAINS

The significant development in the September record of construction contracts awarded was the large gains in publicly-financed projects. It will be recalled that the first evidences of improvement at the beginning of the second quarter of this year occurred in the privately-financed projects.

first nine months of 1933 amounted to \$743,553,300 as compared with \$1,057,563,200 for the corresponding period of 1932.

The largest gain in the September contract record over August was in the public works class.

DODGE STATISTICAL RESEARCH SERVICE



DODGE STATISTICAL RESEARCH SERVICE

Contracts by classes—37 EASTERN STATES

	Sept. 1933	Sept. 1932	1st Nine Mo. 1933	1st Nine Mo. 1932
COMMERCIAL BUILDINGS				
Office Buildings	1,000,000	1,000,000	1,000,000	1,000,000
Stores	500,000	500,000	500,000	500,000
Factories	1,000,000	1,000,000	1,000,000	1,000,000
EDUCATIONAL BUILDINGS				
Schools	1,000,000	1,000,000	1,000,000	1,000,000
HOSPITALS & INSTITUTIONS				
Hospitals	1,000,000	1,000,000	1,000,000	1,000,000
PUBLIC BUILDINGS				
City Hall, Court House	1,000,000	1,000,000	1,000,000	1,000,000
Post Office	1,000,000	1,000,000	1,000,000	1,000,000
RESIDENTIAL BUILDINGS				
Single Family Dwellings	1,000,000	1,000,000	1,000,000	1,000,000
Apartment Houses	1,000,000	1,000,000	1,000,000	1,000,000
GRAND TOTAL BUILDINGS				
Total	1,000,000	1,000,000	1,000,000	1,000,000

These reports are published each month giving the volume of new construction started during the month according to number of projects, square feet of floor space involved and total dollar value for each of 56 different classes of construction. Reports similar to that indicated for the 37 EASTERN STATES are published for each of 13 trading areas as well as separate totals for states, cities and important counties.

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THE ARCHITECTURAL RECORD

PUBLISHED BY

F. W. DODGE CORPORATION

119 West 40th Street, New York, N. Y.

(For District Offices, see page 23)

The aim of The Record is to supply architects and engineers with a selection of news, pertinent to those professions, that is useful at the time of publication.

DESIGN

A major part of each issue's contents is devoted to pictorial presentation of buildings selected for their value in application to architectural demands of the moment. In the selection of buildings for publication The Record enjoys important advantages in consequence of its affiliation with F. W. Dodge Corporation. Dodge Reports Service, with which all architects are familiar, makes available to editors of The Record a currently accurate survey of building activity throughout the 37 Eastern States. Detailed information regarding every project on which an architect is employed is forwarded daily for examination and selection by The Record's editorial staff. Projects of special interest or significance are investigated further with a view to future publication. Thus is The Record enabled to shape its contents in accordance with immediate needs of its subscribers. The Record's illustrated portfolios showing examples of residences or of special building types or of modernization projects represent a limited, thoughtful selection from available material throughout virtually the entire nation.



TECHNICAL NEWS AND RESEARCH

Frequent articles of a technical nature published in The Record are planned, with the aid of Dodge building statistics, to satisfy known needs and interests of the active members of the profession. In counter-balance to the illustrated portfolios which emphasize the design phase of architecture, The Record publishes in each issue one or more articles of a technical character. Under the general heading of Technical News and Research are described advances in construction methods, new materials and products. Typical of such articles are the following which were published in 1935: "Measurement of Conditioned Air"; "The Psychograph: Its Meaning to the Engineer"; "Apartment House Planning Requirements, Including Basic Dimensions"; "Standards for Low-Rent Housing"; "Paint—A Partner in Illumination"; "The Essentials of Prison Design"; "A Modern Medical Center: Its Mechanical and Electrical Equipment"; "Heating the Small House"; "Electricity for the House."

CURRENT BUILDING CONDITIONS

Governmental efforts to stimulate building are fully reported in The Record. Interpretative articles by Federal officials and by staff writers of The Record inform subscribers of opportunities for architects and engineers created by those efforts. Specimen articles of this type published in 1935 are: "F. H. A. Modernization Credit Plan Offers Opportunities to Architects" by Stewart McDonald, Acting Federal Housing Act Administrator; "Standards of Mortgage Insurance"; "State and District Offices of the Federal Housing Administration"; "The Works-Relief Program"; "Public Works—Two Programs Compared"; "Federal Aid in Small House Financing". Supplementing these articles several portfolios illustrated examples of public buildings and new housing developments.

In line with the Federal "Modernize Main Street" campaign The Record conducted a competition, sponsored by Libbey-Owens-Ford Glass Company, for the design of stores and automotive sales-and-service stations. This competition, aiming to focus the attention of architects on practical opportunities for current architectural employment, evidences The Record's constant endeavor to achieve a high degree of timeliness and utility in editorial contents.

BUSINESS AND STATISTICAL

Through the facilities of the Statistical Division of F. W. Dodge Corporation The Record provides its readers each month with a review of significant trends in building, with particular reference to the types of buildings in which architects and engineers are most interested. The article "Trends in Hospital Construction", for example, based upon Dodge construction figures, was published in a recent issue of The Record devoted largely to hospital design and construction. Similar articles of a statistical nature published in 1935 are: "Residential Building Forges Ahead"; "Eight Months Continuous Rise in Private House Construction"; etc.

The above citation of articles published during 1935 illustrates by example the editorial policies observed by The Record. Flexibility and adaptiveness are essential qualities enabling The Record to conform in editorial substance with the requirements of the profession as these requirements become apparent from month to month.

EDITORS AND CONTRIBUTORS TO THE ARCHITECTURAL RECORD

For the architect engaged on large projects The Record publishes reviews of outstanding buildings of that character, emphasizing technical achievements.

MICHAEL A. MIKKELSEN, Ph. D., *Editor*, Vice-President in charge of Magazine Division, F. W. Dodge Corporation; editor of The Architectural Record for 20 years, first to see the editorial possibilities in Frank Lloyd Wright, in the subject of Polychromy and in other forward-looking special studies; originator of the general editorial concept of the Technical News and Research Department.

A. LAWRENCE KOCHER, A.I.A., *Managing Editor*; Director of The Architectural Record's editorial policy. Educated Stanford University and Massachusetts Institute of Technology. Formerly head of School of Architecture, University of Virginia and Pennsylvania State College; university architect of University of Virginia; member Virginia State Board of Examiners of Architects; former chairman (Va.) State Art Commission, A.I.A. Committee on Preservation of Historic Monuments, member Architectural Advisory Board of Restoration of Williamsburg, Va.

THEODORE LARSON, *Technical News Editor*, educated Harvard University with degrees of A.B. and M. Arch.; Nelson Robinson, Jr. Fellowship winner; engaged in architectural research in European and Mediterranean countries; feature writer for newspapers; formerly associated in Boston with architectural firm of Smith and Walker; private architectural practice in Kansas City and New York City, member Medieval Academy of America, International Congress of Modern Architecture.

Representative Contributors to the Architectural Record in 1935

William Muschenheim, Architect
Donald Deskey, Architect
Charles D. White, of Lockwood Greene Engineers, Inc.
L. Seth Schnittman, Chief Statistician, F. W. Dodge Corporation
George S. Holderness of the Office of John Russell Pope, Architect
Clyde R. Place, Consulting Engineer
Sir Owen Williams, Architect and Engineer
William Stanley Parker, F.A.I.A.
Henry L. Logan, Consulting Electrical Engineer
Theodore F. Rockwell, Instructor in Heating and Ventilation, Carnegie Institute of Technology
Colonel Horatio B. Hackett, Director, Housing Division, Public Works Administration
George S. Chappel, Architect and Author
Charles R. Richards, Director, Museum of Science and Industry, New York
Harvey Wiley Corbett, Architect
Frank Lloyd Wright, Architect
Ralph Bennett and T. J. Maloney
William G. Carr, Director, Research Division, National Education Association
Stewart McDonald, Acting Federal Housing Administrator

Every issue contains illustrations of residences, stores and shops and other small buildings; also in every issue are several exemplary remodelings jobs.

HOSPITALS AND MEDICAL CENTERS



HOSPITALS AND MEDICAL CENTERS 379



BROADACRE CITY: A NEW COMMUNITY PLAN

In the article "Broadacre City: A New Community Plan" the author discusses the concept of Broadacre City, a new type of community plan which is based on the idea of "a new kind of community" in which the land is divided into small units, each of which is a self-contained unit. The author discusses the various features of this new community plan, including the use of the automobile, the use of the airplane, and the use of the radio. The author also discusses the various advantages of this new community plan, including the fact that it is a more efficient use of land, it is a more efficient use of resources, and it is a more efficient use of time.

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TECHNICAL NEWS AND RESEARCH PAINT-A PARTNER IN ILLUMINATION

By Ralph Bennett and T. J. Maloney



TECHNICAL NEWS AND RESEARCH 293



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MODERNIZE MAIN STREET COMPETITION

PROGRAM

Sponsored by LIBBEY-OWENS-FORD GLASS COMPANY
Conducted by THE ARCHITECTURAL RECORD

MODERNIZATION



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SWEET'S CATALOG SERVICE

Division of

F. W. DODGE CORPORATION

119 West 40th Street, New York, N. Y.

(For District Offices, see page 23)

SWEET'S CATALOG FILE

This file of catalogs is the product of cooperative group action of hundreds of manufacturers, actuated and directed by Sweet's Catalog Service. The current (1936) file which you have before you, represents a stage in the development of a plan which has been widely accepted by leading architects, engineers, contractors and manufacturers as the most practical, economical and effective method of meeting the catalog needs of these mutually dependent groups.

Since the first appearance of Sweet's in 1906, great progress has been made, but much remains to be done. It is the purpose of this outline to clarify some points which seem not to have been well understood by those who, in their enthusiasm for the Sweet's file *as it is today*, have not fully considered the benefits which lie in its continued development.

CATALOG FILES—OLD STYLE AND NEW

No architect or contractor needs to be reminded of the time, effort and expense required to maintain even a semblance of a workable file in the days before there was any alternative to building one up, piece by piece, from the catalogs supplied at irregular intervals by the manufacturers. The sorting, classifying, filing, refiling and replacement of individually distributed catalogs necessitated a time-consuming routine which few had the facilities or inclination to follow. The result was highly unsatisfactory both to architects and to manufacturers.

It was hardly surprising that building professionals welcomed the inauguration of a new method of catalog distribution which would give them, instead of the raw materials for a file, a complete file in itself. In spite of its modest beginning, the plan was received with universal favor. At once, it became the custom to "look it up" first in Sweet's—and to resort to the old file only when forced to do so. In the following years, the Sweet's file grew to such proportions that many found it unneces-

sary to maintain any other, especially in view of the marked trend toward the distribution of more comprehensive catalogs in Sweet's.

CATALOG ECONOMICS

The splendid support of the building profession has been one of the important contributing factors in the successful development of Sweet's. Many users of this file take every opportunity to recommend to manufacturers that they file their catalogs in Sweet's. Some, with commendable conscientiousness, add the qualification, "provided the cost is not prohibitive," their impression being that the Sweet's plan involves great added expense to those on the selling end. This is far from the fact.

Sweet's clients pay on the average only one cent per page per year to send you their catalogs in the Sweet's file. This charge includes printing, filing and delivery to your office and in many cases, preparation of the catalog by Sweet's staff of consulting architects. It is the cost of *individual* catalog distribution which is prohibitive. Only a pitifully small percentage of separate catalogs find their way into a file—so few that a catalog costing 25 cents to print and deliver, on the average, actually costs \$1.25 per copy filed.

A manufacturer can place a 24-page catalog in 13,000 offices of architects, engineers and general contractors, via the Sweet's file, at less than 24 cents apiece. Even if he were able to prepare, print and distribute individual copies of the same catalog to the same offices for 20 cents apiece, the net result would be a "saving" of \$500. And for this "economy", he would consign 80 per cent of his catalogs to the scrap heap.

Even in the case of the manufacturer who distributes only a single page bulletin, Sweet's can handle the job at less than the cost of mailing alone!

Bulk buying of paper, bulk printing and bulk distribution permit economies which are shared by all clients of Sweet's service. The small portion of the charge which is applied to the service features of Sweet's is not comparable with anything in existence at the present time. Manufacturers cannot assure the maintenance of their

catalogs in recipients' offices, in convenient and accessible form, in any other way, *at any price*.

WHEN THE MANUFACTURER ASKS YOU ABOUT CATALOGS

In spite of ample precedent and convincing evidence there are still some manufacturers to whom the idea of distributing a catalog as an integral part of the Sweet's file appears somewhat radical. Aside from the very human tendency to resist change, there is often an honest doubt in their minds that a catalog filed in Sweet's can make for more satisfactory and profitable business relations than if distributed individually. They find it difficult to believe that the catalogs which they have prepared with such care and thoroughness (when that is actually the case) will fail to be rewarded by interested attention and use by recipients. Even though they admit the existence of a catalog filing problem in the latter's offices, with its attendant wastes, each believes that *his* catalog is the exception to the rule, and that it will be singled out for preservation and use.

Every so often, one of the less reactionary spirits decides to check up on the situation. The usual procedure is to conduct a questionnaire investigation.* Some of these are well designed to elicit the desired information; but others are so lacking in this quality that a busy man might unwittingly convey a wrong impression in his reply.

For instance, a manufacturer with a four-page condensation of his catalog in Sweet's might send you a separate copy of his regular catalog with the ambiguous question:

"Would you prefer that we send you our catalog individually, or shall we confine our effort to Sweet's?"

Of course you want the complete information and you tell him so. But unless you make it plain that you prefer to have it sent to you filed in Sweet's he will assume your preference to be for a separate catalog. He should have stated his case somewhat as follows:

"We are planning the distribution of a new catalog. Would you prefer to receive a loose copy or shall we send it to you in the Sweet's file?"

*Sweet's takes this opportunity to express its appreciation to all who have taken time and trouble on many occasions to answer these inquiries. It has been especially gratifying to see also that they are not disposed of in a perfunctory manner, but that users of Sweet's have shown a willingness to express their ideas on the subject, specifically and at length.

Then there would be no misunderstanding of the question or of the answer.

Another example of this ambiguity is found in the question:

"Is it your habit to consult the Sweet's file for catalog information on _____?"

Now it may happen that the manufacturer in this case issues an unusually valuable catalog which is retained by more than the average number of offices, not because the separate catalog is preferred, but because the information is not completely presented in the Sweet's file. Under these circumstances, your answer might be misleading—unless you take the trouble to explain that it is your habit to consult the Sweet's file first for all catalog information; that in this instance you have been forced to go elsewhere to supplement the information; and that you would prefer to have it completely presented in Sweet's.

The new user of Sweet's may wonder at our apparent presumption in assuming that replies will be generally favorable to Sweet's. We can only say that our modesty has been carried away in the many landslides for Sweet's which these surveys have precipitated.

THE CURRENT TREND

The ultimate aim of Sweet's is to furnish you each year with a file of catalogs in which you can find useful, up-to-date information on the products of every reputable manufacturer.

A measure of the progress toward this goal is found in the yearly increase in the number of real catalogs. It should be remarked at this point that the number of pages does not, in every case, indicate the completeness of information, or lack of it. In addition to the many catalogs in Sweet's whose bulk alone marks them for attention, there are scores of complete catalogs which do not exceed a half-dozen pages or so. These are just as valuable and useful in connection with the products they describe as the catalogs in which the complete presentation necessitates the use of eighty or a hundred pages. The important point is that Sweet's clients as a whole have come to appreciate the value of this kind of contact and that the present trend is away from the "advertising" form and toward the "catalog" form of presentation.

It is also significant that nearly all the ground gained has been retained. In other words, when a manufacturer has learned to take full advantage of Sweet's service, he continues to use it year after year. The few who drop

out do so, almost invariably, for reasons which do not concern the quality of the service rendered.

Of eighty-six manufacturers who filed the largest catalogs in Sweet's in 1936, twenty-two have distributed their catalogs in this form for twenty-five years or more; sixty-four for ten years or more; and seventy-six for five years or more. Since 1920, through sixteen of the most critical years in American business history, each year has shown a gain in the size of the catalogs used by this group—from an average of 4.3 pages per manufacturer to 23.1 in 1936. During the same period, the total number of catalog pages used by members of this group has grown from 372 to 1,993.

BEHIND THE SCENES

An architect, writing to acknowledge receipt of a new Sweet's, commented on the thousands of changes and revisions necessary to bring the hundreds of manufacturers' catalogs up to date and ended his letter with "How on earth do you do it?"

He may not have realized that the distribution of a complete Sweet's file is but the culmination of twelve months of catalog service rendered continuously to hundreds of manufacturers. Throughout the year, Sweet's is busy preparing the material for clients' catalogs and, whenever new catalogs are needed immediately, printing and distributing advance copies which will be filed and distributed later in the complete file.

Here is the procedure.

Preliminary

Fourteen district managers and their assistants, working out of offices strategically placed from coast to coast, make preliminary arrangements with manufacturers, receive their orders and transmit their detailed instructions to the proper department in the home office in New York.

Catalog Preparation Architectural and Engineering Consultants

In order that catalogs in Sweet's may contain information of real usefulness to you, the services of a staff of consulting architects, engineers and contractors are placed at the manufacturer's disposal without charge. All members of this staff are men of practical experience. Most of them are members of the A.I.A. and have previously conducted successful private practices. They have compiled scores of the most comprehensive and useful catalogs in Sweet's.

Copy Service

Sweet's maintains, in addition, an experienced copy staff, which operates under instructions from the consulting staff or direct from the manufacturers.

Editorial Service

Catalogs are reviewed and edited from the user's point of view to check any facts, figures, statements or illustrations which might not be understood or might mislead and suggestions for changes are forwarded to manufacturers for approval and incorporation before printing.

Classifying and Indexing

This work proceeds concurrently with the receipt of okayed proofs. Catalogs are first classified into sections according to products cataloged and then alphabetically as far as possible by manufacturers' names within each of these sections. These important operations, which require up-to-date and extensive knowledge of all products and expert supervision, contribute greatly to the usefulness of the Sweet's file.

Printing and Binding

After copy in proof form has been approved by manufacturers it is printed, as fast as forms can be assembled, in one of the largest and best equipped plants in the country. 10 carloads of paper were required for the current file. Finally 60,000 separate volumes of catalogs (four to a file) are permanently bound to withstand the constant handling they receive and to insure each manufacturer's catalog against loss.

Distribution

Now comes the work of getting upwards of 200 tons of manufacturers' catalogs to their proper destinations, in order that they will be accessible in 13,000 offices of architects, engineers and general contractors. The lists have been kept up-to-date throughout the year through Dodge Reports and other authentic records. Shipping cartons, labels and receipts are ready. For a solid month thousands of sets of Sweet's move by freight, express, parcel post and motor truck—and a new, up-to-date file has reported for duty, to carry on the work of its predecessor. Throughout the year, as important new firms are reported by the 500 reporters and correspondents of F. W. Dodge Corporation, of which Sweet's Catalog Service is a division, these firms are provided with the Sweet's file.

* * * * *

The cycle is endless. As soon as the new Sweet's file is delivered to your office, work commences on the next. Hundreds of people participate directly or indirectly in its compilation and distribution. In addition to those employed by Sweet's clients, by paper producers, engravers, printers and distributing agents, eighty individuals on the Sweet's staff are employed the year 'round to provide you with this service.

DISTRICT OFFICES

F. W. DODGE CORPORATION

ATLANTA.....	313 Red Rock Bldg.....	Walnut 6516
BALTIMORE.....	535 Equitable Bldg.....	Plaza 3138
BIRMINGHAM.....	805 Farley Bldg.....	Birmingham 3-8524
BOSTON.....	855 Park Square Bldg.....	Hancock 0700
BUFFALO.....	315 Jackson Bldg.....	Cleveland 8200
CHICAGO.....	105 West Adams Street.....	Dearborn 3500
CINCINNATI.....	800 Broadway.....	Parkway 2866
CLEVELAND.....	821 Hanna Bldg.....	Cherry 7256
COLUMBUS.....	83 South High Street.....	Adam 9770
DALLAS.....	414 Construction Industries Bldg.....	Texas 2-9073
DES MOINES.....	504 Securities Bldg.....	Des Moines 3-8401
DETROIT.....	607 Shelby Street.....	Cadillac 2745
HOUSTON.....	507 Merchants & Mfrs. Bldg.....	Preston 9341
INDIANAPOLIS.....	1034 Archts. & Bldrs. Bldg.....	Lincoln 6816
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MILWAUKEE.....	125 East Wells Street.....	Marquette 2922
MINNEAPOLIS.....	407 South 4th Street.....	Atlantic 1474
NEW ORLEANS.....	326-8 Balter Bldg.....	Main 1950
NEW YORK.....	119 West 40th Street.....	Pennsylvania 6-1500
PHILADELPHIA.....	1321 Arch Street.....	Locust 4326
PITTSBURGH.....	501 Bessemer Bldg.....	Atlantic 8220
ST. LOUIS.....	721 Olive Street.....	Chestnut 7390
WASHINGTON.....	1341 G Street, N. W.....	Metropolitan 2017
WEST COAST.....	1214 Tyler St., Glendale, Calif.....	Omaha 3-4381

F.W. DODGE



CORPORATION

FOUNDATIONS

- SECTION -

2

CATALOGS 1 to 5

MEMORANDA

CARNEGIE-ILLINOIS STEEL CORPORATION

GENERAL OFFICES
Carnegie Building, PITTSBURGH, PA.

DISTRICT OFFICES

BIRMINGHAM
BOSTON
BUFFALO

CHICAGO
CINCINNATI
CLEVELAND

DENVER
DETROIT
HOUSTON

NEW YORK
PHILADELPHIA
PITTSBURGH

ST. LOUIS
ST. PAUL
WASHINGTON

EXPORT REPRESENTATIVES

UNITED STATES STEEL PRODUCTS COMPANY, NEW YORK

PACIFIC COAST REPRESENTATIVES

COLUMBIA STEEL COMPANY, SAN FRANCISCO, LOS ANGELES,
PORTLAND, SALT LAKE CITY, SEATTLE

United States Steel Corporation Subsidiary

STEEL BEARING PILES

Products

STANDARD STRUCTURAL SECTIONS, WIDE-FLANGE CB SECTIONS, LIGHT-WEIGHT STRUCTURAL SECTIONS, COLUMN BASE PLATES, FLOOR PLATES, A FULL RANGE OF BAR MILL PRODUCTS, CONCRETE REINFORCING BARS, I-BEAM-LOK and T-TRI-LOK ARMORED BRIDGE FLOORING, STEEL SHEET PILING, USS STAINLESS and HEAT RESISTING STEELS.

For page on light-weight sections see Index.

Steel Bearing Piles

Steel Piles are not new. Various individual and combinations of different steel sections have been used as bearing piles for more than 40 years with entire satisfaction. The introduction of the H-type of section over 25 years ago gave considerable impetus to the use of steel for this purpose. Examination of the steel piles of hundreds of bridges in the middle west, in service from 25 to 38 years, and still in excellent condition, discloses the important fact that loss of metal from corrosion is a negligible factor, too slight to be of any consequence.

CBP Sections Are New

The immediate popularity of sturdy, wide flange CB Structural Sections (introduced in 1927) for bearing pile use led to the design of special sections, particularly



adapted to the purpose. These are known as CBP Sections and differ from standard CB Sections in that webs and flanges of the bearing pile sections are of approximately uniform thickness, except in one or two instances where it was impractical to reduce the flange thickness to that of the web. CBP Sections are recommended for any and all purposes for which any type of bearing pile may be used.

Special Advantages

The great capacity per pile, the ease and speed of driving, the fact that steel piles can be driven with minimum displacement or disruption of the soil, thus reducing the possibility of disturbance to adjacent structures, the elimination of jetting, ease of field splicing, positive penetration to any desired depth through hard-driving material, resistance to borers—these and many more advantages commend steel piles to those concerned with buildings and bridge foundations, trench and sewer construction, grade crossing elimination work, and a host of other applications.

A New Book

Heretofore, there has not been available from any one source a comprehensive record of tests and of the past uses and applications of steel bearing piles. A profusely illustrated, 80-page book, presenting an extensive review of the use of steel piles in the past, as well as data on current practice in the design and use of CBP Sections, will be sent on request. Address inquiry to the home office or any of the district offices of the Company.



MacARTHUR CONCRETE PILE CORPORATION

ORGANIZED IN 1910

19 West 44th Street, NEW YORK, N. Y.

BRANCH OFFICES

BOSTON, MASS., 101 Tremont Street

NEW ORLEANS, LA., 833 Howard Avenue

PITTSBURGH, PA., Barr and Willard Avenues

MacARTHUR CONCRETE PILE CO., LTD., New Birks Building, MONTREAL

A Special Pile for Every Condition—Not One Pile for All Conditions

The MacArthur Method employs "*A Special Pile for Every Condition—Not One Pile for All Conditions*" but the method of forming each type is such that all can be placed with our standard equipment. Therefore, when unexpected subsoil conditions are encountered and a change in plans becomes suddenly necessary, there is no delay incidental to bringing in equipment for special piles, as the equipment is already on the site and all material used is available locally.

MacArthur Concrete Piles are all cast-in-place piles and are all of the straight shaft type. They include:

Straight Shaft and Pedestal Piles—These are our standard uncased compressed concrete piles. Used for all ordinary soil conditions where piles up to 40 ft. in length are required.

Cased Concrete Piles

Conceding to the demands of many engineers who have a professed leaning toward cast-in-place piles with permanent casings, we developed and added to our other types, a pile with a permanent casing, and, in 1930, actively marketed it.

Since that time, we have installed hundreds of thousands of lineal feet of the cased type of pile in many locations in thirteen states and the District of Columbia. The consistently satisfactory results obtained during our long experience installing uniform diameter or straight-sided uncased cast-in-place concrete piles caused us to make the cased type of pile cylindrical or uniform in diameter.



Group of MacArthur Cased Piles Driven for Cincinnati Union Terminal

COL. HENRY M. WAITE, Chief Engineer
We had 19 separate contracts for this development



Site of U. S. Post Office, Cincinnati, Ohio
SAMUEL HANNAFORD & SONS, Architects

U. S. Treasury Department contract—2,762 MacArthur Cased Concrete Piles, as shown to the left, driven



Goodyear Zeppelin Corporation Airship Factory and Dock, Akron, Ohio

WILBUR WATSON & ASSOCIATES, Architects and Engineers
MacArthur Compressed Uncased Piles driven for this structure

Typical Installations of MacArthur Cased Concrete Piles

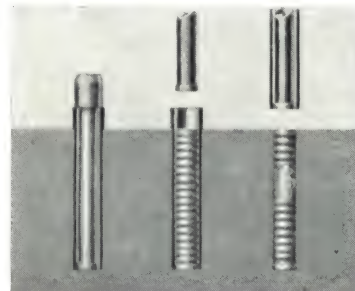
Bathing Pavilion—City of New York—Rockaway
Gas Holder—Niagara Hudson Power Co., Troy, N. Y.
Grade Crossing—B. & O. R.R.—Clifton, N. Y.
Heating Plant—N. Y., N. H. & H. R.R.—New Haven
Highway Bridges—State of New York—at Davenport Centre and Tappan, N. Y.
Machine Shop—National Bearing Metals Corp., Jersey City, N. J.
Marine Hosp.—U. S. Treasury Dept.—New Orleans, La.
Metropolitan State Hospital—Waltham, Mass.
Packing Plant—Armour & Co.—Indianapolis
Power Plant—Electro-Metallurgical Co.—Boncar W. Va.
Power Plant—Westvaco Chlorine Products Co., South Charleston, W. Va.
Springwell Pumping Station—City of Detroit
Stock House—Schaefer Brewing Co.—Brooklyn
U. S. Post Offices—U. S. Treasury Dept.—at Tamagua, Pa., New Bern, N. C. and Cincinnati
Cincinnati Union Terminal—19 Contracts
War Memorial, D. of C.—Washington, D. C.



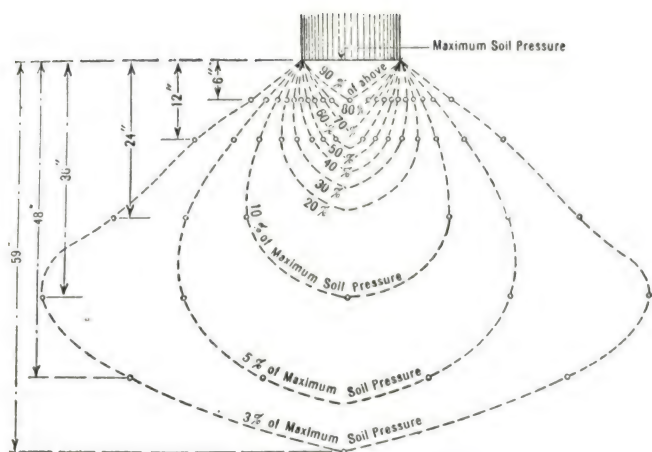
This Driving Apparatus Forms the Standard Uncased and Cased Piles

Method of Forming Cased Concrete Piles

(See diagram at right)
Fig. 1—Core and steel casing driven into the ground.
Fig. 2—Core removed, interior of driving casing inspected, and permanent steel casing placed in driving casing.
Fig. 3—Driving casing withdrawn and permanent casing filled with concrete.



Method of Forming Cased Piles



Load Distribution by Bulb Pressure

"John F. Groathead, C.E., Section Engineer in the days of the William Street, New York, Subway, plotted lines of equal vertical pressure beneath a 13½-in. circular plate, disclosing, in a manner which can be readily grasped, the general distribution of pressure beneath a footing. This he called the *Bulb of Pressure*." Lazarus White on the "Science of Foundations," (Trans. A.S.C.E., Vol. 93, 1929, p. 335). The above diagram is reproduced from this paper

Straight Shaft Uncased Compressed Concrete Piles for All Ordinary Soil Conditions

This pile calls for a workable dry mix concrete compressed under a weight of 7 tons after the concrete is poured. This forces a dense, homogeneous concrete into intimate contact with the surrounding soil and gives maximum skin friction with the earth. It is so much denser than the soil that it cannot be disturbed, distorted or forced out of place by driving adjacent piles, as might be the case with a wet uncompacted concrete enclosed by a thin casing. Perfect piles are formed on 2-ft. 6-in. centers in the most rubbery of clays.

A steel driving shell with walls ½ in. thick and of uniform diameter throughout its length is driven to penetration, so that the shell is intact and absolutely true in diameter throughout while the concrete is being placed. The pile is as strong at the base as it is at the top—has twice the diameter at the base as the ordinary tapered form of pile and has more concrete in each pile.

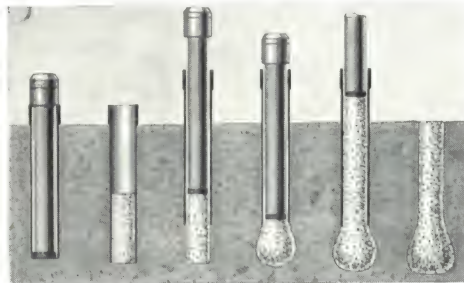
It is a known fact, that concrete should be rammed or compressed after being placed in forms, to secure perfect cohesion and to remove voids caused by pouring. In a cast-in-place pile it is necessary to dump the concrete down a steel shell a considerable distance. When a wet sloppy mix is used, the sand, cement, water and stone will undoubtedly separate and the chance of the aggregates again arranging themselves in correct proportion is very remote indeed.

The MacArthur Method calls for a water ratio of 6 gal. of water per bag of cement with sufficient coarse aggregates to make what is termed a "dry mix."

Note: See recommendations of Portland Cement Association in their booklet "Design and Control of Concrete Mixtures."

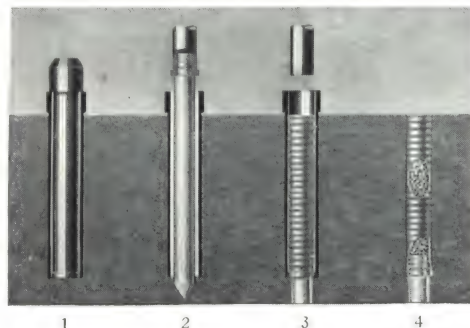
MacArthur Compressed Concrete Straight Shaft Pedestal Type

- (1) Core and casing driven into ground.
- (2) Core removed, charge of concrete dropped to bottom of casing.
- (3) Casing pulled up 18 in. to 3 ft. with 7-ton pressure of core and steam hammer remaining on concrete.
- (4) Charge of concrete rammed out.
- (5) Core is removed, casing filled with concrete. Core replaced and casing steadily withdrawn while concrete is under 7-ton pressure.
- (6) Finished shaft with enlarged base



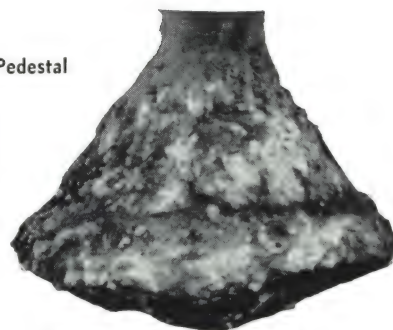
MacArthur Composite Type (Cased Concrete and Wood Pile)

- (1) Core and casing driven into ground.
- (2) Core withdrawn and timber, with pan on shoulder, placed in casing.
- (3) Timber guided by casing, driven down to give necessary bearing. Butt of timber below ground water level. Core withdrawn and permanent shell inserted through casing and locked to timber and pan.
- (4) Casing withdrawn and concrete deposited in permanent corrugated shell.



Bulb Ends of MacArthur Pedestal Piles

At right is the bulb end of an excavated MacArthur Pedestal Pile driven in soft soil of absolutely uniform pressure. Its similarity to the 3% section of the diagram shows that this bulb, formed under pressure from above, has assumed the form most capable of sustaining weight



They Adapt Themselves to the Ground Condition

These bulb ends, excavated for examination, show how each bulb adapts itself to the condition of the soil immediately surrounding it

- (1) Dense soil, uniform pressure. (The pressure being uniform, the bulb took on form similar to the 10% section in the diagram).
- (2) Dense soil, uneven pressure.
- (3) Dense rocky soil

Typical Installations of MacArthur Uncased Compressed Concrete Piles

- American-Enka Corp., Enka, N. C.—Rayon Plant, 3600 piles
- Boston & Maine R.R., North Billerica, Mass.—Repair Shops, 2714 piles
- Brooklyn Union Gas Co., Brooklyn, N. Y.—Various Structures, 15,000 piles
- Bureau of Yards & Docks, U. S. Navy Yard, Philadelphia, Pa.—General Store House, 2799 piles
- Canadian Pacific Ry., Toronto, Ont.—High Level Terminal, 3000 piles
- Illinois Steel Co., South Chicago, Ill.—Bar Mill, 1364 piles
- Jersey Central Power & Light Co., South Amboy, N. J.—Power House, 1593 piles
- Lynn Gas & Electric Co., Lynn, Mass.—Gas Holder and Retort House—1918 piles
- Milwaukee County Courthouse, Milwaukee, Wis.—6682 piles
- National Tube Co. (U. S. Steel Corp.), McKeesport, Pa.—Duplex Open Hearth Plant, 6000 piles
- Northern Electric Co., Montreal, P. Q.—Manufacturing Buildings, 1480 piles
- Northern Indiana Gas & Electric Co., Fort Wayne, Ind.—Various Structures, 1178 piles
- State of Ohio and City of Cincinnati, Ohio—W. 8th St. Viaduct, 4000 piles
- Pacific Gas & Electric Co., Oakland, Cal.—8 million-cu. ft. Gas Holder, 1837 piles
- City of Philadelphia, Pa.—Municipal Stadium, 4208 piles
- Port Alfred Pulp & Paper Co., Port Alfred, P. Q.—Paper and Pulp Mills, 4003 piles
- Standard Oil Co., Jersey City, N. J.—Stills, etc., 2026 piles
- Willys-Overland Co., Toledo, Ohio—Various Buildings, 11,000 piles
- Wisconsin Steel Co., South Chicago, Ill.—Coke Ovens, 2548 piles

Special Notes and Engineering Information on Cast-in-place Concrete Piles

Engineering-News Formula—

$$L = \frac{2WH}{S + 0.1} \left\{ \begin{array}{l} L = \text{Load in pounds} \\ W = \text{Weight of falling parts in pounds} \\ H = \text{Drop in feet of falling parts} \\ S = \text{Final penetration per blow in inches} \end{array} \right.$$

A No. 1 steam hammer has a weight of 5000 lbs. falling 36 ins.

Pile Length—It is necessary to adopt in the specification a length of pile so as to secure uniformity in the bids. This length can be determined approximately from examination of the borings. (We will be glad to make recommendations covering correct bid length upon receipt of boring data.)

Pedestal Piles—It is sometimes found that there is a firm stratum of soil lying between layers of poor soil which would sustain the superimposed load if it could be properly distributed by a larger base than is possible with standard diameter piles, thereby making a desirable saving in pile length. Also, in some cases the foot of the concrete pile rests on an inclined rock, which tends to cause a side slip of the pile. The addition of a pedestal overcomes this danger by giving a larger end bearing and more intimate bond.

Reinforced Piles—Piles may be reinforced with single central rod or with a hooped cage without delay in driving operations. When so reinforced these piles may be used to withstand uplift (43-ton test load has been withstood without movement). This is valuable to resist overturning movement due to wind; or to reduce cantilever action.

Metal Shoe—In wet or semifluid soils pile forming casing is sealed before driving with a suitable metal shoe.

RAYMOND CONCRETE PILE COMPANY

INCORPORATED AUGUST 18, 1902

Concrete Piles and Special Concrete Work

140 Cedar Street, NEW YORK, N. Y. 111 West Monroe Street, CHICAGO, ILL.

BRANCH OFFICES IN PRINCIPAL CITIES, IN CANADA AND ABROAD

Services and Facilities

Our staff of experts is at your service to assist in the design and installation of concrete piles for all purposes and to meet all conditions.

Our engineering department is available to engineers and architects at all times for investigation work and consultation, and we will gladly submit recommendations, designs and estimates covering any problem within the scope of our business.

The Gow Company, Inc., an affiliated corporation, has for many years, specialized in caissons of all kinds, and is prepared to make borings or soil investigations in any part of the United States.

A FORM FOR EVERY PILE—
A PILE FOR EVERY PURPOSE

Classification of Concrete Piles

Concrete piles are of three types: "Cast-in-place"; "Pre-cast" and "Composite."

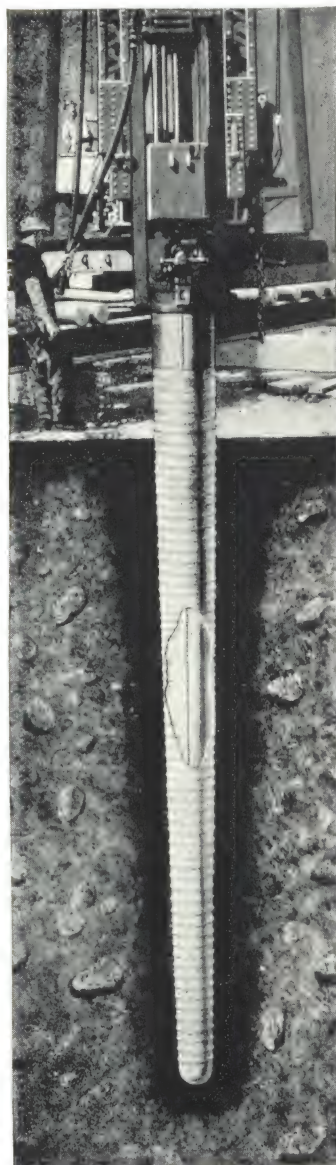
Cast-in-place Concrete Piles—Piles

which are made in place are commonly referred to as "cast-in-place" concrete piles, divided into two classes:

- (a) Those in which a form is left in the ground to preserve the integrity of the finished pile, and the driving resistance created (the Raymond Standard Method).
- (b) Those in which the concrete is placed by means of a temporary driving form which is removed before the concrete hardens, leaving the pile confined only by earth (not the Raymond Standard method).

Pre-cast Concrete Piles—Piles of this type are cast in forms or moulds, then driven like wooden piles.

Composite Piles—This type is made by superimposing a cast-in-place concrete pile, or section, on a previously driven wood pile. Generally used where unusual depths are encountered.



Standard Raymond Concrete Pile

RAYMOND CAST-IN-PLACE CONCRETE PILES

Installed by the Raymond Method in Which the Non-removable Steel Shell, Which Protects the Concrete, is Driven on the Outside of the Mandrel and Retains the Driving Resistance.

Standard Raymond Concrete Pile

(In lengths up to 37 ft. 6 in.)

The Standard Raymond Concrete Pile is of uniform taper; generally 8 in. in diameter at point and increasing .4 in. in diameter per lineal foot. Thus a pile 30 ft. in length would ordinarily have a point diameter of 8 in. and a butt diameter of 20 in. Under certain conditions, however, as when the pile is unusually short and largely point bearing on rock, hardpan, heavy gravel or sand, the point diameter is increased to a little more than 11 in. (see further description on following page).

Step Tapered Raymond Concrete Pile

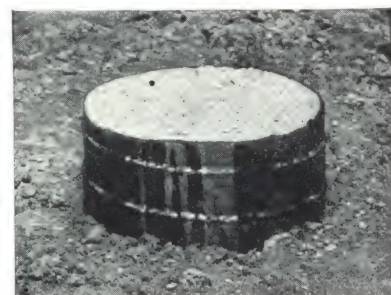
(In lengths up to 100 ft. or more)

This Raymond Pile is tapered as its name implies, in a series of steps, each 8-ft. section being 1 in. larger in diameter than the one immediately below it and each section tapering slightly but uniformly. This pile is a development of the past three years and has fulfilled a long-felt demand for a cast-in-place concrete pile with all the fundamental safeguards of the Raymond system but without the length limitations heretofore inherent in the cast-in-place type of pile (see further description on following page).



Typical Section of Raymond Spiral Reinforced Shell Which Maintains the Resistance Developed by Driving

Not less than 24 gauge sheet iron.
Not less than 1/4-in. diameter hard drawn steel wire



Head of Completed Pile, Ready for the Footing

The Raymond Method and Its Advantages

The distinguishing feature of the Raymond system is the steel shell driven in contact with the soil and never withdrawn, serving the following essential purposes:

- (1) To serve as a form for the piles.
- (2) To prevent the admixture of foreign substances.
- (3) To retain the original moisture in the mixture until the concrete is thoroughly hardened.
- (4) To prevent distortion by external pressure, due to the driving of adjacent piles or accumulated pressures from displacement by the pile itself.
- (5) To perfectly retain the displaced earth forming the wall of the cavity, so that there may be no relaxation of the ground and therefore no loss of the resistance to which the pile has been driven.
- (6) To act as reinforcement of the pile until the concrete shall have attained its maximum strength.

These fundamentals are adhered to in Raymond practice whether cast-in-place piles be of the Standard Raymond Taper, the Step Taper, or the Composite type.

Other Advantages—The use of concrete piles as compared with wood piles has many advantages, among which are the following:

- (1) Absolute permanency: immunity from decay or from the attacks of wood borers and destroyers (not assured even by creosoting).
- (2) Economy, because of greater carrying capacity—meaning a less number of piles for a given load. The greater carrying capacity rests upon several points—to wit:
 - (a) Greater size, therefore greater displacement and frictional area.
 - (b) Greater taper, therefore greater frictional value per square foot.
 - (c) Perfect shape, therefore positive contact with the ground at every point.
 - (d) Possibility of inspection after driving, hence the ability to load to full capacity, instead of making a large allowance for inefficiency as in the case of wood piles subject to injury by over-driving, telescoping, departing from the vertical, and like defects, none of which are discernible at the moment when correction is possible.
 - (e) Decreased length of pile as a natural consequence of greater size and taper.
- (3) Smaller and lighter footings, because of decreased number of piles, hence less dead load to be carried.
- (4) Required pay length is determined after driving.
- (5) Practical elimination of shoring, underpinning, sheeting, pumping and deep excavation and the reduction of masonry.
- (6) Due to decreased number of piles and consequent reduction in width of wall footings, the centerline of columns can be brought nearer to the building line.
- (7) Important saving in time caused by:
 - (a) The smaller number of piles required.
 - (b) The reduction in the amount of excavation, shoring, sheeting and pumping.
 - (c) The reduction in quantities of footing or masonry.
 - (d) Manufacture of the pile in place, from materials readily procurable in all localities, and limit of manufacture to the actual number and exact length of piles required. There is no delay for cutting and trimming trees, hauling to shipping point, transporting for great distances by rail or water and delivery to the job, perhaps only to find that the piles are too long or too short.

Raymond Standard Tapered Pile

Installed by means of a collapsible steel core encased in a spirally reinforced steel shell having the point closed by a heavy pressed steel boot. The thickness of the steel shell and the diameter of reinforcing wire spirals depend upon the character of the soil to be penetrated, obstructions encountered in driving, etc.; all to the end that when the driving core is withdrawn, the remaining shell must constitute a clean and rigid form for the concrete, free from water, sand or other foreign substance, and of the full cross-section of the driving core, thus showing that the withdrawal of the core has not released accumulated pressures nor diminished calculated bearing values. Inspection to provide assurance on these points is very simple.

The heavy taper of this type of pile offers maximum resistance for a given length—proved by comprehensive records of driving resistance, plus extensive series of loading tests, during which the real carrying power of the pile has been checked with the driving resistance.

The failure to appreciate these features of the tapered pile has increased the cost of many concrete pile foundations for the reason that contracts have frequently been awarded solely on the basis of the lowest price per lineal foot.



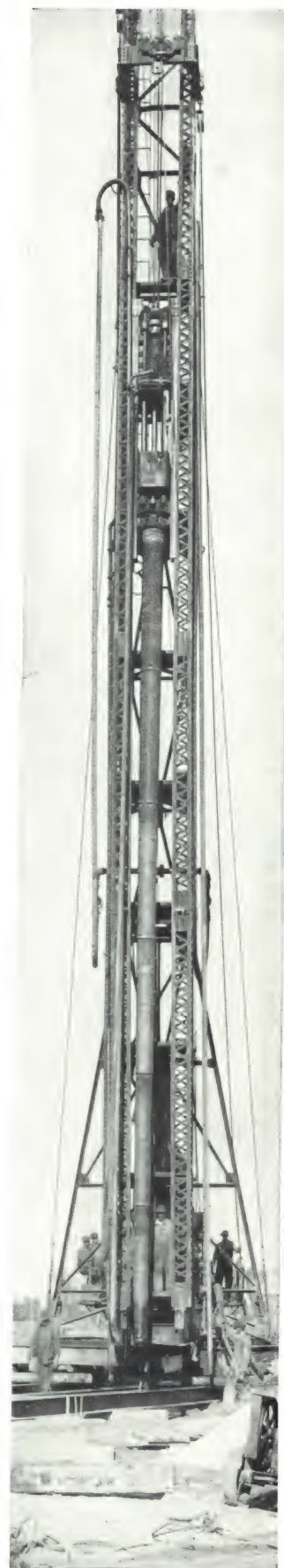
Section and Tip of Steel Casing

Raymond Step Tapered Pile

This type of pile finds its greatest usefulness where the objective is direct bearing in a stratum of hard material which may underlie one or more layers of unstable soil, between or above which there may be strata of sufficient hardness or density to resist penetration by a pile whose resistance is increased by its tapered shape. The step taper pile also permits of driving to a greater depth than the ordinary cast-in-place pile because of its rugged construction features, being driven by a non-collapsible hollow steel core whose projecting beveled shoulders, resulting from the outward steps of increased diameter at each 8 ft. of length, bear upon the specially rolled steel rings welded to the bottom of each section. Thus the blow of the hammer is transmitted through the solid core to these rings which, with their sloping exterior under-surfaces, bear against the ground and tend to remove from the path of the pile boulders and other obstructions which might otherwise injure the shell. The shell itself is spirally corrugated and electrically welded watertight in the longitudinal joints. The shell varies in thickness from 14 to 16 gauge up to as light as 20 and 24 gauge, depending almost entirely upon the nature of the soil to be penetrated. Each section is firmly attached by screw connection to the one above it, so that the shell is assembled into a single unit with all joints properly sealed against the entrance of water or other foreign substance.



Completed Step Tapered Piles



Installing a Step Tapered Raymond Concrete Pile

RAYMOND CAST-IN-PLACE CONCRETE PILES

Raymond Step Tapered Piles (Cont.)

The point diameter is generally 10¼ in., but this may be varied to suit job conditions and is sometimes as great as 11¼ in. and 12¼ in. Piles of this type have been placed in lengths up to 100 ft. and can be made longer when conditions require. When the length exceeds 56 ft. the excess length is of uniform diameter; 10½ in. to 10¾ in. diameter and the shell of ¼ in. to ⅝ in. in thickness, with cast steel or cast iron driving point.

Since this pile was introduced in 1931, some 1,000,000 feet of

these piles in forty-three separate jobs, and under a great variety of conditions, have been installed on important Government, State and corporate works. In all cases they have received the enthusiastic approval of the engineers and others interested. These piles have in many cases been successfully driven to penetration through materials heretofore regarded as impossible. This type of pile has proved to be very economical as compared with any other type where long piles are necessary.

Loads and Spacings

Usually Raymond Concrete Cast-in-Place Piles are driven to a working load of 30 tons each, but in some cases from 35 to 40 tons are safely carried. A working load of 30 tons per pile is accepted as standard by most building departments. The usual spacing of the Standard Tapered Pile is 2-ft. 6-in. centers for piles up to 30 ft. in length; for piles in excess of 30 ft. in length, a spacing of 3-ft. centers is more desirable. For Step Tapered Piles, however, regardless of length, a 2-ft. 6-in. spacing is usually satisfactory.

In view of the very wide variation in soil conditions and other considerations affecting both the price and the design, it is suggested that the nearest Raymond office be conferred with, so that the site can be investigated and recommendations made.

In calculating the resistance to penetration, the *Engineering News* formula, based on using a steam hammer, has been generally adopted by the engineering profession.

This formula follows:

$$L = \frac{2WH}{S + 0.1} \begin{cases} L = \text{Load in pounds} \\ W = \text{Weight of falling parts in pounds} \\ H = \text{Drop in feet of falling parts} \\ S = \text{Final penetration per blow in inches} \end{cases}$$

A No. 1 steam hammer has a weight of 5000 lb. falling 36 in.

A No. 2 steam hammer has a weight of 3000 lb. falling 30 in.

Thus the carrying capacity of the Raymond Concrete Pile is not a matter of guesswork or speculation, but is susceptible of computation and demonstration.

Prices

The Raymond Concrete Pile is "made-in-place" and not sold by the foot, f.o.b. cars, consequently it is impossible to quote prices without knowing the conditions under which the work is to be done.

For even approximate prices, it is necessary to have some knowledge of the number of piles, probable length, the approximate spacing, soil conditions, accessibility of the site, etc.

Specifications

If "Raymond Concrete Piles" are called for, this is of course sufficient. On the other hand, if it is for any reason inadvisable to name them specifically, the following specifications will cover:

"Concrete piles shall be of a type specially approved by the architect or engineer, and shall be placed in the following manner:

A steel mandrel or pile core shall be encased in a spirally reinforced steel shell (8 in. in diameter at the point and 20 in. 30 ft. above that point), and driven to a proper penetration.

(Note: Where special conditions indicate the desirability of Raymond Step Tapered Concrete Piles, change the parenthesis in the above paragraph to read:

"10 in. in diameter at the point and 15 in. in diameter 40 ft. above that point.")

The pile core shall then be withdrawn from the shell.

Before placing the concrete, each shell shall be inspected and, being found perfect, shall thereupon be filled with concrete placed in accordance with the best practice."

or

"Moulded-in-place piles shall be of a type suitable for the conditions and subject to the approval of the architect or engineer. They shall be formed in driven casings permanently left in place, which shall be of sufficient strength to prevent distortion or bulging after mandrel has been withdrawn and while the cavity is being filled with concrete or during the driving of adjacent casings."

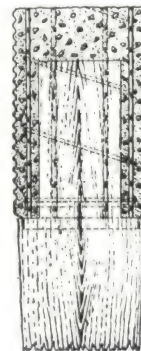
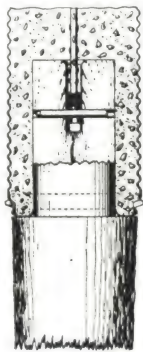
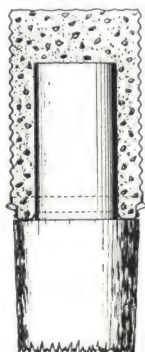
RAYMOND COMPOSITE PILES (Wood and Concrete)

The Composite Pile shown at the left, has its own particular place in the scheme of "A Pile for Every Purpose." It was developed by this Company to supply dependable foundations for one of the largest plants in the country, where hard pan lay at depths varying from 70 to 110 feet, the soil from the surface down to that

point being soft clay and silt and utterly unreliable for either spread footings or concrete piles of any length practicable from the standpoint of cost. At various times, during and since 1917, approximately 50,000 Raymond Composite piles, varying in length from 60 to 120 ft., have been driven for this plant alone. The elevation of permanent moisture in relation to the cut-off of the piles was such that the concrete section of the pile was,



Raymond Composite Pile



in general, about 15 ft. in length. As will be readily apparent, the matter of prime importance in this type of pile is the joint between the concrete and wood sections—the considerations being (1) a seal between the two sections to prevent the entrance of mud and water, and (2) a sufficient anchorage to prevent the concrete section heaving and separating from the

wood. The Raymond Company has perfected several joint types which are reliable and economical—four of which are illustrated at the bottom of the preceding page—and the question of a proper joint is no longer a problem. However, the particular type applicable to the particular situation requires consideration in individual cases.

RAYMOND PRE-CAST CONCRETE PILES

Pre-cast piles are cast in moulds and then driven in place like wooden piles.

They have a large and useful field of application, particularly in marine structures, such as docks, bulkheads, and similar structures.



The RAYMOND CONCRETE PILE COMPANY is prepared through its experience, to give good advice on the use of pre-cast piles, and also to design and construct work in which a pre-cast pile can be used economically and advantageously.

SPECIAL CONCRETE CONSTRUCTION

In addition to the placing of standard Raymond Concrete Piles for foundation of structures on land, we construct and design permanent docks, piers, bulkheads, trestles, storage bins, retain-

ing walls, bridges, heavy foundations, shipways, dry-docks, etc.

Each problem requires special study for solution and our experienced organization is yours to command.



New Orleans Pontchartrain Bridge

CAISSONS

The Gow Company, Inc., a Raymond affiliate, specializes in *underpinning* and *caisson construction*, and maintains facilities for sub-surface exploration, including *core borings* in earth and rock. It offers its co-operation and experience to architects, engineers and others considering *difficult foundation problems*.

The Gow Company has, during the past few years, designed and installed caisson foundations under most difficult conditions for many important structures; and is equipped to meet any sub-surface condition.

Your attention is called to the accompanying illustration (*right*) of the Gow rotary bucket excavator which has been used under certain conditions for excavating caissons up to 7 feet in diameter and to depths as great as 120 feet.

The Gow Company, through its engineering connections, is also equipped to install circular caissons by the mud laden fluid rotary drilling method which has been developed, for use in lieu of the pneumatic method, where quicksand, etc., is encountered.



SPENCER WHITE & PRENTIS, INC.

Foundations and Underpinning

SPENCER WHITE & PRENTIS, INC.

10 East 40th Street
NEW YORK, N. Y.

SPENCER & ROSS, INC.

Book Building
DETROIT, MICH.

Products

FOUNDATIONS of every type.
UNDERPINNING of every type.
MASS CONCRETE CONSTRUCTION.
SOIL TESTS.

Services

SPENCER WHITE & PRENTIS, INC., are prepared to consult with architects, engineers and owners on their foundation and underpinning problems, to submit de-

signs, and to install foundations, underpinning, and mass concrete construction.

The personnel of the SPENCER WHITE & PRENTIS, INC., companies have been engaged for many years in engineering operations. They have developed numerous construction processes, among which are Tuba Steel Foundations, the installation of foundations for new buildings under existing buildings on the site either before or during demolition of the latter, Pretest Foundations and Pretest Underpinning.

Caisson Foundations

SPENCER WHITE & PRENTIS, INC., have installed many caisson foundations including the deepest building foundation in the world, and are fully equipped to do both pneumatic and open caisson work. Improved methods for installing caisson foundations, which reduce both the cost

and the time required for installation, have been developed by these companies. Under many conditions these newer methods permit the use of open caissons in place of the more expensive pneumatic type.

Some of the caisson foundations installed are:

Central Savings Bank, New York, N. Y.
Bank of Manhattan Building, New York, N. Y.
21 West Street Building, New York, N. Y.
Fidelity Philadelphia Trust Co., Philadelphia, Pa.
Cleveland Union Terminal, Cleveland, Ohio
City Hall, Buffalo, N. Y.

Foundations Under Existing Buildings

To save time in construction, SPENCER WHITE & PRENTIS, INC., have developed methods for installing new building foundations prior to or during the demolition of existing buildings on the site. The time saved has run from four to six months on big operations, and in one case has made it possible to demolish existing buildings and erect a new 70-story building in eleven months.

Caissons to rock, Tuba Steel Foundations to rock, or spread footings are installed in the basements of the old buildings on the site. When necessary, due to lack of space or time, temporary footings are installed sufficient to carry only a part of the ultimate load, and are increased in size later.

Steel erection is started immediately upon completion of the demolition, sometimes before it is finished. After the steelwork is under way, the general excavation and incidental work are done and the temporary foundations are increased to their permanent size.

Buildings where these methods were used include:

American Surety Co., New York, N. Y.
Bank of Manhattan Building, New York, N. Y.
Abraham & Straus Department Store, Brooklyn, N. Y.
Hudson Department Store, Detroit, Mich.

Tuba Steel Foundations

Tuba Steel Foundations are composed of groups of concrete filled steel cylinders. They provide permanent rock-bearing support at great savings in time and expense over open or pneumatic caissons.

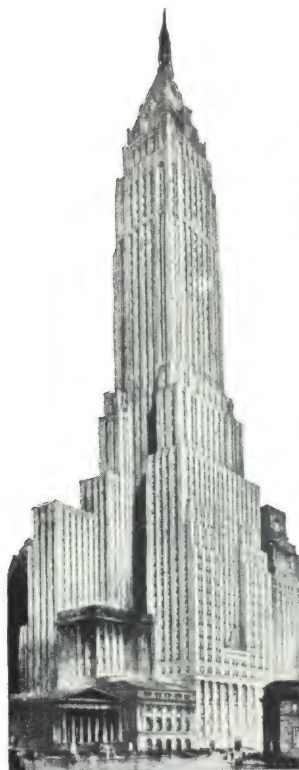
The Tuba Steel Cylinders which comprise these foundations are steel tubing, 10 $\frac{3}{4}$ to 20 ins. outside diameter, $\frac{5}{16}$ to $\frac{5}{8}$ in. thick, driven to rock by steam or pneumatic hammers.

Sections of tubing are joined together by internal cast steel sleeves. After being seated on the rock they

are cleaned out, filled with concrete and capped with reinforced concrete.

Safety—Tuba Steel Cylinders derive their support from end bearing and not from skin friction. On this account they are not subject to damaging settlement and are not affected by future adjoining operations. When driven to rock they are the equivalent in every respect of caisson piers.

Speed—Tuba Steel Foundations effect a time saving over open caissons of 50% or more, and can be



Caisson Foundations Installed During Demolition of Old Building—Bank of Manhattan Building, New York

H. CRAIG SEVERANCE and YASUO MATSUI, Associated Architects
STARRETT BROS. AND EKEN, INC., Builders



One of the World's Deepest Building Foundations—250 Ft. Below Curb, Union Terminal, Cleveland

GRAHAM, ANDERSON, PROBST & WHITE, Architects
CLEVELAND TERMINALS CO., Engineers

installed more rapidly than concrete or wood pile foundations.

Economy—Generally, Tuba Steel Cylinders can be installed at much lower cost than caisson piers to rock. For great depths, water conditions, and where piers are to be installed near adjoining structures, the saving is very great. They can usually compete in price with any type of pile foundation.



Carrying Capacity—Tuba Steel Cylinders are figured as unsupported columns. The New

Tuba Steel Foundations Installed in 19 Working Days, Wall and Hanover Building, New York

DELANO & ALDRICH, Architects
STARRETT BROS. & EKEN, Builders

NEW YORK BUILDING CODE
Allowable Load in Tons for
Bearing on Rock

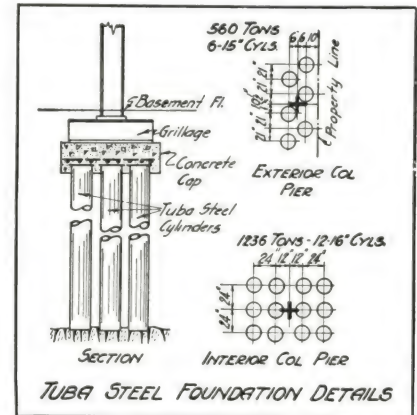
Diam., in.	Thickness of shell, in.			
	5/16	3/8	7/16	1/2
10	49.8	57.6	65.5	73.4
12	64.4	73.6	83.0	92.4
14	75.3	84.4	93.5	102.4
15	83.6	93.5	103.3	112.9
16	92.4	103.0	113.4	123.8
18	111.2	123.1	134.9	146.6

Note: When rock is at a prohibitive depth, Tuba Steel Cylinders are driven to other strata. So driven, they have all of the advantages of Tuba Steel Foundations to rock, except that the loadings are reduced.

York Building Code conservatively allows 500 lbs. per sq. in. on the concrete and 7500 lbs. per sq. in. on the steel after deducting the outside $\frac{1}{16}$ in. of steel for possible rusting.

A Few of Many Tuba Steel Foundations—

Wall and Hanover Building, New York, N. Y. (38 stories)
Starrett-Lehigh Building, New York, N. Y.
19 Rector Street Building, New York, N. Y. (44 stories)
National Newark and Essex Bank Building, Newark, N. J.
Industrial Trust Co., Providence, R. I.
First National Bank, Tampa, Fla.



Pretest Underpinning (Patented)

Pretest Underpinning is employed to provide new and deeper foundations for existing structures when adjacent excavations are to be made which may affect the existing foundations. It is also employed to arrest the settlement of structures whose foundations have proved inadequate and to increase the bearing capacity of existing foundations to which loads are to be added.

Advantages—Pretest Underpinning is applicable to every type of structure and to nearly every ground condition. It entails the least interference with the full use of the structure and of adjoining property and streets during installation. Pretest Underpinning eliminates damage through settlement by reducing settlement to the absolute minimum.

Pretest Method—Details of the Pretest Underpinning method are varied as required to meet individual conditions. Generally, sectional steel cylinders are jacked down beneath the foundation of a structure to a satisfactory bearing material, cleaned out and filled with concrete. Each

cylinder is then tested to overload, usually 50% in excess of permanent load, and the load of the structure is transferred to the cylinder by the patented Pretest wedging method which maintains the full test load on the cylinder during wedging. Under any other method the test load is released, resulting in rebound of the cylinder and subsequent settlement when the load of the structure is applied. Pretest Underpinning prevents this rebound and eliminates settlement or reduces it to a negligible amount.

Where Used—Pretest Underpinning has been installed under hundreds of structures, including buildings up to 28 stories in height, bridge piers, elevated railroads, retaining walls, chimneys, etc. It has been used for underpinning the buildings along many miles of subways in New York and Philadelphia.

Concentrated loads up to 1200 tons have been underpinned by the Pretest Method, and cylinders have penetrated to depths as great as 90 ft.



Testing and Wedging Pretest Cylinders

Concrete Underpinning

For structures on dry materials at reasonable depth, plain concrete underpinning is used. The modern method is to sink pits—so located and constructed that, generally, no needling or shoring is required—build concrete walls or piers in the pits up to the existing foundations and transfer the load to the new footings by dry packing or wedging.

Pretest Soil Tests

The Pretest Method (patented) is a most accurate means

of determining the bearing value of soils at reasonable cost. Reaction is obtained under an existing structure, against the sides of a pit or against a loaded platform. The test is made by hydraulic jacks on any desired area and can be maintained at any loading for as long a period as desired.

Mass Concrete Construction

SPENCER WHITE & PRENTIS, INC., install heavy concrete structures such as bridge piers, viaducts, dams, retaining walls, etc., especially under difficult conditions.

Details of any of the above processes will be supplied on request

WESTERN FOUNDATION COMPANY

Engineers and Contractors

308 West Washington Street
CHICAGO, ILL.

Products

PILES: Cast-in-place Concrete; Composite Concrete and Wood; Steel Pipe, open or closed end; Precast Concrete; Wood.

Also Caissons; Underpinning.

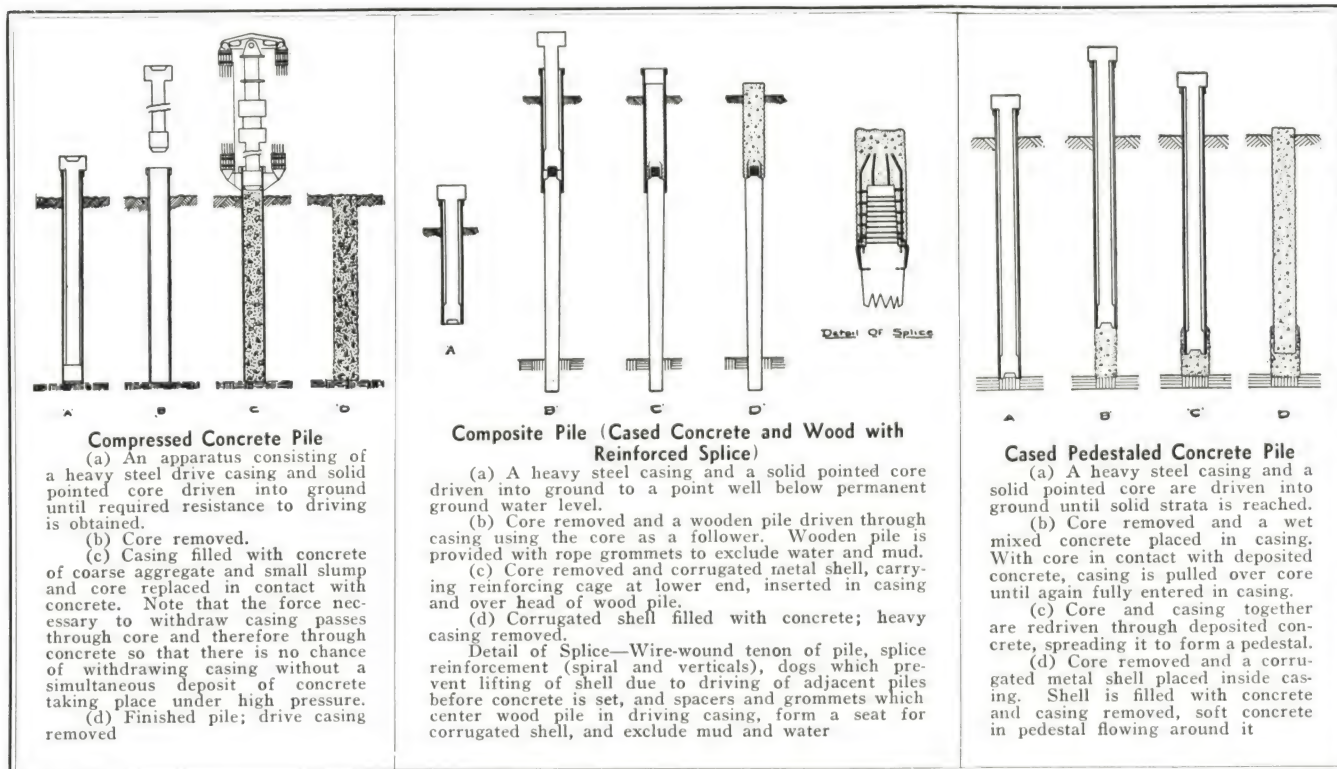
Service Based on Experience

The WESTERN FOUNDATION COMPANY is prepared to install any type of foundation required where it is

not practical to use spread footings. Experience shows that no one type of foundation is either economically or engineeringly correct for all soil conditions.

Three typical methods are shown below. Folder will be mailed on request showing numerous other types and giving full specifications.

We invite correspondence and would be glad to have our engineers confer with any one relative to their problems.



Some of the Jobs We Have Done

Akron, Ohio—Cuyahoga River Outfall Sewer
O'Neil Department Store
Albany, N. Y.—Arbor Hill Junior High School
Allentown, Pa.—Evansville Cement Plant
Attica, N. Y.—State Prison
Battle Creek, Mich.—Battle Creek Sanitarium
Biloxi, Miss.—U. S. Veterans' Home
Bonner Springs, Kan.—Bonner Springs Cement Plants
Camden, N. J.—Wilson Building
Chicago, Ill.—Buckingham Memorial
Shedd Aquarium
Stadium, Grant Park
Tribune Tower
Cincinnati, Ohio—Crosley Radio Building
Times-Star Building
Union Terminal Co., Cont. No. 212
Covington, Ky.—Lincoln-Grant School
Detroit, Mich.—City Airport
Ford Administration Building
East Pittsburgh, Pa.—Westinghouse Electric & Mfg. Co.

Edgewater, N. J.—Ford Motor Company Plant
Flint, Mich.—Bell Telephone Building
Hannibal, Mo.—Power Plant
Indianapolis, Ind.—W. J. Holliday Warehouse
Jacob's Creek, Pa.—Pittsburgh Coal Co. Banning Mine
Lexington, Ky.—Teachers' Training School
Louisville, Ky.—Louisville High School
Martin's Creek, Pa.—Alpha Portland Cement Company
Milwaukee, Wis.—Pittsburgh Plate Glass Co.
Philadelphia, Pa.—Girard College
Richmond, Cal.—Ford Motor Company Plant
Rochester, N. Y.—Charlotte Jr.-Sr. High School
Sacramento, Cal.—Pre-Treatment Works Filtration Plant
Saginaw, Mich.—S. S. Kresge Company
Salina, Kan.—Robinson Milling Company
Seattle, Wash.—Ford Motor Company Plant
Syracuse, N. Y.—Thompson Road Grade Elimination
Toledo, Ohio—Toledo Hospital
Waukegan, Ill.—North Shore Coke Company
Wingdale, N. Y.—Harlem Valley State Hospital

**MASONRY
MATERIALS**
- SECTION -

3

MEMORANDA

**MASONRY
MATERIALS**
- SECTION -

3

CATALOGS 1 to 19

**STONE AND
TERRA COTTA**

MEMORANDA

CUT STONE ASSOCIATION OF INDIANA

P. O. Box 57, BLOOMINGTON, IND.

MEMBER FIRMS

Producers and Fabricators of Indiana Limestone

BEDFORD CUT STONE COMPANY, Bedford, Indiana.
BLOOMINGTON LIMESTONE CORPORATION, Bloomington, Indiana.
BOWMAN & SCHWAB STONE COMPANY, Bloomington, Indiana.
THE CARL FURST COMPANY, Bedford, Indiana.
HARDING & COGSWELL, INC., Ellettsville, Indiana.

THE F. B. HARRIS CUT STONE COMPANY, Bloomington, Indiana.
MONON STONE COMPANY, Bloomington, Indiana.
SHAWNEE STONE COMPANY, Bloomington, Indiana.
SWENSON STONE COMPANY, Bloomington, Indiana.
WOOLERY STONE COMPANY, Bloomington, Indiana.

The Product

Indiana Limestone is nationally known. Its permanence, durability and general utility have been firmly established by its use over a period of more than three quarters of a century in many of the Country's most architecturally prominent buildings and it enjoys the distinction of being the most used building stone in America.

Its good structural and pleasing color tone characteristics, together with its excellent working qualities, render Indiana Limestone particularly adaptable to the economical interpretation of all types of architectural design.

Service Available

The CUT STONE ASSOCIATION OF INDIANA is a service organization only—of long standing.

A Plan Bureau is maintained to facilitate estimating and bidding on Indiana Limestone. Through this association Architects may obtain preliminary estimates, samples of stone, suggested form of specifications and technical bulletins on Indiana Limestone.

Architects are requested to make use of our plan bureau. By so doing it assures a number of

INDIANA LIMESTONE

QUARRIED IN MONROE AND LAWRENCE COUNTIES, INDIANA

Also Known as Salem or Bedford Stone

fair competitive bids. Plans should be sent to this Association as soon as bids are called for in order that each member firm may have sufficient time to make individual estimates.



Quarry View Showing the Turning Over of a Huge Cut of Stone in the Foreground

This cut, about 4 ft. wide and 11 ft. deep and 67 ft. in length, has weight of approximately 250 tons. Above, in the center, a cut the full length of the quarry opening is shown. This cut is about 4 ft. wide by 11 ft. deep and 115 ft. in length; has weight of approximately 500 tons



Exemplifying the Use of Indiana Limestone—Medical Buildings, University of Chicago, Chicago, Ill.



Classifications—Regular Grades

Select Buff	Select Gray
Standard Buff	Standard Gray
Rustic Buff	Old Gothic

Variegated (a promiscuous combination of Buff and Gray).

Description of the various grades of stone will be furnished on request.

All grades are supplied by each member firm and their capacity of both quarry and cut stone fabrication exceeds any probable demand.

VERMONT MARBLE COMPANY

Producers and Manufacturers of Exterior and Interior Marbles
Finishers of Foreign Marbles for Interior Purposes

PROCTOR, VT.

BRANCHES AND SALES OFFICES

BOSTON, MASS., 44 School Street
ALBANY, N. Y., 805 State Bank Building
CHICAGO, ILL., 5535 No. Lincoln Street
CLEVELAND, OHIO, 4300 Euclid Avenue
LOS ANGELES, CAL., 857 Roosevelt Building

NEW YORK, N. Y., 101 Park Avenue
PHILADELPHIA, PA., 22nd and Westmoreland Streets
SAN FRANCISCO, CAL., 525 Market Street
TACOMA, WASH., East End 11th Street Bridge

DALLAS, TEX., Vermont Marble Company of Texas, 1513 Wall Street
WASHINGTON, D. C., Southern Building, 15th and H Streets, N. W.
TORONTO, ONT., Ontario Marble Co., Ltd., 403 Manning Chambers Building

Facilities

The company has large sawing mills and finishing plants in Vermont; also finishing plants in Philadelphia, Cleveland, Chicago, Dallas, San Francisco, Tacoma, and Peterboro, Ontario. (Ontario Marble Co., Ltd.)

At Tacoma is the storage yard for the Alaska marble for shipment in rough or finished state. It can also be supplied from any of the other plants.

Varieties

Vermont Marble—Over 40 varieties, including white, lightly clouded and veined; gray, light green and dark green; red and black.

Alaska Marble—Several kinds, pearl white veined with gray or black predominating.

Colorado Marble—The VERMONT MARBLE COMPANY now owns and operates the well-known quarries at Marble, Colo.

Foreign Marble

The VERMONT MARBLE COMPANY is ready at all times to provide, finish and install marble from European and other foreign quarries.

Interior Marble Service

We contract either for interior marble work installed or to finish and furnish it to local interior marble dealers, following whichever method will give best service to architects, contractors and owners.

Classes of Work Supplied—Wainscot and interior decorative treatment generally: floor tile, stair treads, bank screens, counter tops, soda counters, electric switchboards, scale tops, lamp bases, and many other purposes.

Marble Exhibit in New York City

There is an exhibit of large-sized samples of our marbles at our New York office in the Architects' Building, 101 Park Avenue, to which architects, engineers, contractors and owners are cordially invited.

Larger Display at Proctor

The *new marble exhibit* at Proctor includes more than 50 varieties of marble from our quarries in Vermont, Colorado, Montana and Alaska—wainscot and base, set in spacious booths in varied arrangements of color and veining. Visitors are welcome.

"The Book of Vermont Marble"

A book of standard filing size giving condensed information relative to the quarrying, finishing, setting and detailing of marble. Furnished without charge to any architect on request.

Adaptability

Innumerable are the ways in which Vermont marble may be applied to building construction. Nor is it merely a beautiful product. It is thoroughly sanitary as well as fireproof, though it may be readily cleaned.



City Hall, Schenectady, N. Y.—Vermont Marble and Brick
McKIM, MEAD & WHITE, Architects

Although initial cost of marble may be slightly in excess of certain other materials, in the end it is no more expensive.

Care and Cleaning of Marble

Marble is entitled at all times to the treatment which is given to any other fine product. It should be kept free from dirt and sources of stain, not alone while the building is in progress, but throughout its long and serviceable life.

Marble needs no redecorating or refinishing but does need occasional cleaning, and that work should be intelligently done.

A little book issued by the VERMONT MARBLE COMPANY, contains all the necessary instructions. This book will be sent to any one who will take the trouble to write for it.

Internal Structure

All Vermont Marbles are made up of tightly interlocked crystals. This not only gives them strength and durability, but adapts them to sculptural and other intricate forms where fineness of detail is essential.

Composition

The composition of marble is less complex than almost any other stone. It is almost pure carbonate of lime, 98% or over in the form of the mineral calcite (CaCO_3).

A typical white calcite Vermont marble slightly mottled with gray, according to Geological Survey Bulletin 521, gives the following analysis:

Carbonates	99.174
Manganese and aluminum oxide	.005
Insolubles	.63
Organic matter.....	.08
	99.889

Compressive Strength

The importance of crushing strength is greatly overestimated. Most stones on the market will support ten times as much weight as is ever required of them.

It means little to the average person to say that a stone will stand so many thousand pounds to the square inch. It is much simpler to say that the marbles we recommend for exterior building work could be used in the base of a tower $2\frac{1}{2}$ to 3 miles high before failure from compression alone would result.

Marble is unusually flexible. Blocks of stone used in a building are often subjected to a bending strain due to improper setting. The movement necessary to relieve the strain may be imperceptible but it is enough to crack the average stone. Most marbles are flexible enough to allow readjustments to take place instead of fracture.

The weight of marble is approximately 170 lbs. to a cubic foot.

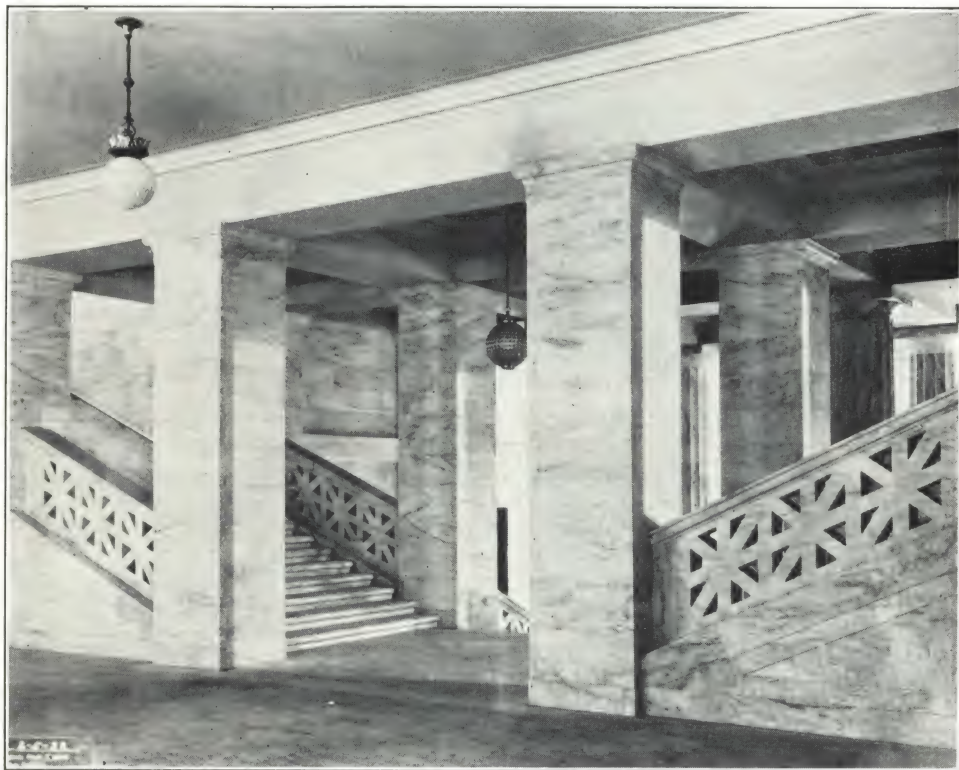
Hardness

Hardness in a stone simply means that it will resist abrasion, not that it will resist exposure to the weather.

The rock in which diamonds (the hardest known substance) occur is made of two minerals—one having a hardness of 6 to 7 Moh's Scale and the other a hardness of 5. The surrounding rock is made up largely of a mineral having a hardness of $2\frac{1}{2}$. The diamond-bearing rock is much harder—yet it weathers and disintegrates so much more rapidly than the soft surrounding rock that circular depressions mark the place where it is found.

Absorption

The freezing of moisture, completely filling open spaces in a rock, is the most severe test to which that rock can be subjected. No stone has been found which is unaffected by this test. It follows, therefore, that other factors being the same, the best stone is one which will exclude moisture most completely. Water expands when it freezes and forces the containing walls farther apart. Fracturing due to this cause increases greatly with the increase in absorption.



State Capitol, Charleston, W. Va.—Vermont Marble with Travertine Floors
CASS GILBERT, Architect



District of Columbia War Memorial, Washington, D. C.—Vermont Marble

FREDERICK H. BROOKE, Architect

HORACE W. PEASLEE and NATHAN WYETH, Associate Architects

Other things being equal the stones which absorb the most water will be least likely to endure.

The following statement was made by Dr. Hiram A. Cutting, the eminent geologist:

"I have no doubt that the capacity of a stone to absorb moisture is against its durability even in the warm climates, and vastly more so in a changeable and wintry climate where it is often frozen before any considerable part of the moisture from autumn rains can be evaporated."

In addition to the exceptionally low absorption of Vermont marble, all the pore space is not filled upon immersion.

The air that is locked in the micro-crevices is compressed under freezing conditions and acts as a cushion, saving the stone from the rupturing action of freezing.

In the flood of 1913 the Vermont marble interior of the City National Bank, Dayton, Ohio, was subjected to an unusual water test. Although it was submerged for three days, all that was needed to restore it to its original condition was a little cleaning.

SUGGESTED SPECIFICATIONS FOR EXTERIOR MARBLE

Material—All cut stone work shall be (insert name of variety of marble wanted).

Quality—All marble entering into the construction of the work shall be selected for uniform color. It must be free from cracks, chips, stains, or other defects upon exposed surfaces.

Samples—Before proceeding with the work the contractor shall submit a sample 4x8x2 ins. of the marble he proposes to use. One face of this sample shall have (specify what finish is desired).

Absorption Tests

Taken from bulletins issued by the United States Government:

Material—100 lbs.

Gray Vermont Marble absorbs:
0.122 lbs. of water

Brandon Vermont Marble absorbs:
0.116 lbs. of water

Pittsford Valley (Vt.) Marble absorbs:
0.106 lbs. of water

Danby (Vt.) Marble absorbs:
0.102 lbs. of water

Yule Colorado Marble absorbs:
0.100 lbs. of water

Weathering

Marble is the result of a sedimentary formation that has been metamorphosed by heat and pressure to a crystalline product. In this process any unstable constituents have been reduced to their ultimate condition and cannot decay further from atmospheric agencies alone.

The CO₂ fumes in the atmosphere of the modern city, when combined with rain water, have a solvent effect on natural building stones. The effect is in proportion to the freedom with which the acid may move through a rock. Marble is so impervious to moisture that the action is limited to the exposed surfaces of the stone.

In the process of weathering there is formed a protective coating which is nature's own best preservative. That is one reason why we do not recommend the sandblast for cleaning.

Fire Resistance

Vermont marble will stand a heat of 1200° F. without injury.

The Security Savings Bank, San Francisco, a Vermont marble structure, was in the path of the great fire. Adjoining buildings of brick and stone were ruined by the intense heat, but the Security Bank remained intact. Several other cases of this kind might be cited.

Joints—All marble shall be cut for $\frac{3}{16}$ -in. joints.

Finish—All exposed surfaces of marble work shall have (specify desired finish).

Drawings—Detailed drawings will be furnished by the architect for all work requiring them. The contractor shall make and submit for the architect's approval, shop drawings showing in plan and elevation the dimensions of all stones, position of joints, and the spacing of dentils or other repeated ornament.

Cutting—All cutting must be done in a work-

manlike manner and in accordance with the shop drawings referred to. All faces shall be free from winds, so as to present a true and even surface. Joints shall be at right angles to the face. Intersecting profiles shall be accurately cut. Re-entering angles of mouldings shall be cut from the solid, unless otherwise shown by the drawings. The contractor shall, where called for by the architect's drawings, cut the marble work to accommodate steel, flashings, leaders or other structural materials.

Delivery—All marble shall be crated or otherwise protected so as to be delivered at site in good condition.

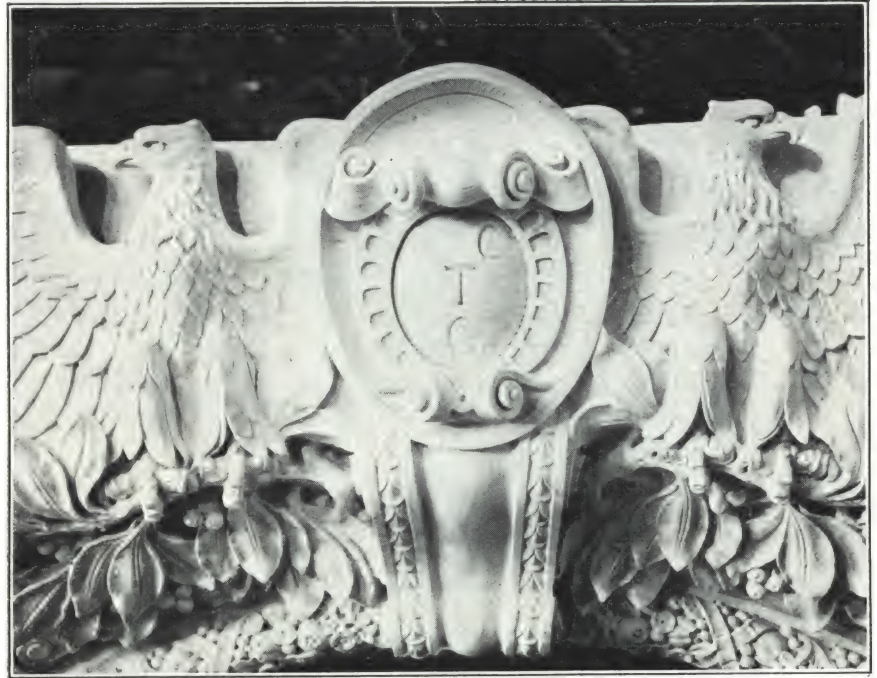
Storage—All marble stored at the site shall be on cleats, off the ground, and protected where necessary from any stains from above.

Setting—Marble shall be set with a derrick and in full bed of mortar. The mortar bed shall be kept back at least 1 in. from the face of the stones.

Mortar—Mortar for setting marble shall be composed of one part white non-staining Portland cement, three parts clean, sharp sand and a quantity of hydrated lime equal to 10% of the volume of cement.

Protection—During construction, all sills, moulding, or other work liable to injury shall be suitably protected by boards which shall not be removed until the cleaning and pointing is done.

Anchors—Anchors to be of wrought iron, heavily galvanized or painted two coats with an approved brand of dampproofing paint and allowed to dry before using. For each stone 2 ft. long one anchor shall be



Section of Entrance, Chittenden County Trust Co., Burlington, Vt.—Danby Vermont Marble
HARPER & WEST, Architects

used, and for each stone over 2 ft. long, at least two anchors. Provide suitable clamps at corners and such special anchors as the architect may direct. Balusters shall be doweled top and bottom with brass, copper, zinc or some other non-staining metal.

Pointing and Cleaning—All exposed surfaces of the building shall, on completion, and when directed by the architect, be cleaned with clean water only and fiber brushes.

All joints shall be raked out, 1 in. back from the face, and carefully pointed with a mixture of one part white non-staining Portland cement and two parts clean white sand. Joints shall be ruled with a tool of approved shape.

SUGGESTED SPECIFICATIONS FOR INTERIOR MARBLE

Material—All interior marble shall be as follows: All toilet marble, Vermont Venoso; all corridor marble, Vermont Brocadillo. (Always insert the name of the desired grade, avoiding the too general term "Vermont Marble.")

Quality—All interior marble shall be of good quality, free from stains. Patching will be permitted only where natural imperfections of a particular stone are subject to correction by the established usage of the industry.

Samples—Before proceeding with the work contractor shall submit to the architect samples of all marble specified above, 1 ft. square and $\frac{7}{8}$ in. thick.

Finish—All floors and stair treads shall have a fine sand finish.

All standing marble shall be highly polished.

Drawings—Detailed drawings will be furnished by the architect for all work requiring them. Contractor

shall make and submit for the architect's approval, shop drawings showing proposed jointing.

Measurements—Before proceeding to finish the interior work contractor shall verify all measurements at the building.

Cutting—The marble contractor shall do such necessary cutting and fitting to accommodate his work to other trades as is sanctioned by common usage in the trade.

Setting—All floor marble shall be set in a cement mortar of one part cement and three parts sand, adding a quantity of hydrated lime, not exceeding 10% of the volume of cement. Concrete fill must be swept and thoroughly sprinkled before setting is started. All stair treads and all standing marble shall be set in plaster of Paris. All wall marble shall be securely anchored with brass, copper or aluminum wire. When work is completed all marble shall be cleaned and left in good condition.

COLD SPRING GRANITE COMPANY, INC.

Quarriers and Producers of Granite

GENERAL OFFICES AND PLANT
COLD SPRING, MINN.

Variety of Products

COLD SPRING RAINBOW GRANITE.
COLD SPRING PEARL PINK GRANITE.
COLD SPRING PEARL WHITE GRANITE.
COLD SPRING PEARL BLACK GRANITE.

Cold Spring Modern Economies

The modern methods of quarrying employed in reducing waste and producing quarry stock of approximately true rectangularity together with the modern cutting and finishing processes, most of which are accomplished by machine, reduces to a reasonable basis the hitherto high cost of the old hand methods in producing both cut and polished granite.

No excess stock is shipped since the stock is sawed to uniform thickness which, depending on its use and location, may be as thin as one and one-half (1½) inches.

Recommended Economical Finishes

Samples of stock and finish will be furnished on request.

Machine Smooth—A very attractive and economical pebbled surface produced by shotting or rubbing the stock after it comes from the saw.

Rubbed—A uniformly smooth surface produced by rubbing with carborundum. In all but the polished finish, we recommend rubbed moulds and step risers, for an economy, as well as to assure true profiles and sharp arrises.

Polished—Permanent high polish.

Service

The COLD SPRING GRANITE COMPANY, INC. is prepared to cooperate to the fullest degree with Architects and Contractors in the successful and economical use of its products. Preliminary estimates will be furnished on request.

THIN POLISHED GRANITE IS IDEAL FOR STORE FRONT MODERNIZATION



Taylor Department Store, Cleveland, Ohio
Modernized with Thin Polished Cold Spring Pearl Black Granite
WALKER and WEEKS, Architects

The use of Polished Granite in thin slabs of one (1), one and one-half (1½), and two (2) inch thicknesses for the facing of street level facades of both new and modernized business buildings, store fronts, bulkheads, etc., has been proven not only most attractive in appearance but actually the most economical material that can be selected for these purposes. It is interesting to note that the leading merchants throughout the country for the past several years, realizing the inherent, permanent beauty of color and finish of polished granite and its negligible maintenance cost, have selected this material for their store fronts. In sawing thin slabs of granite, it is necessary that ½ in. thickness variation be allowed.

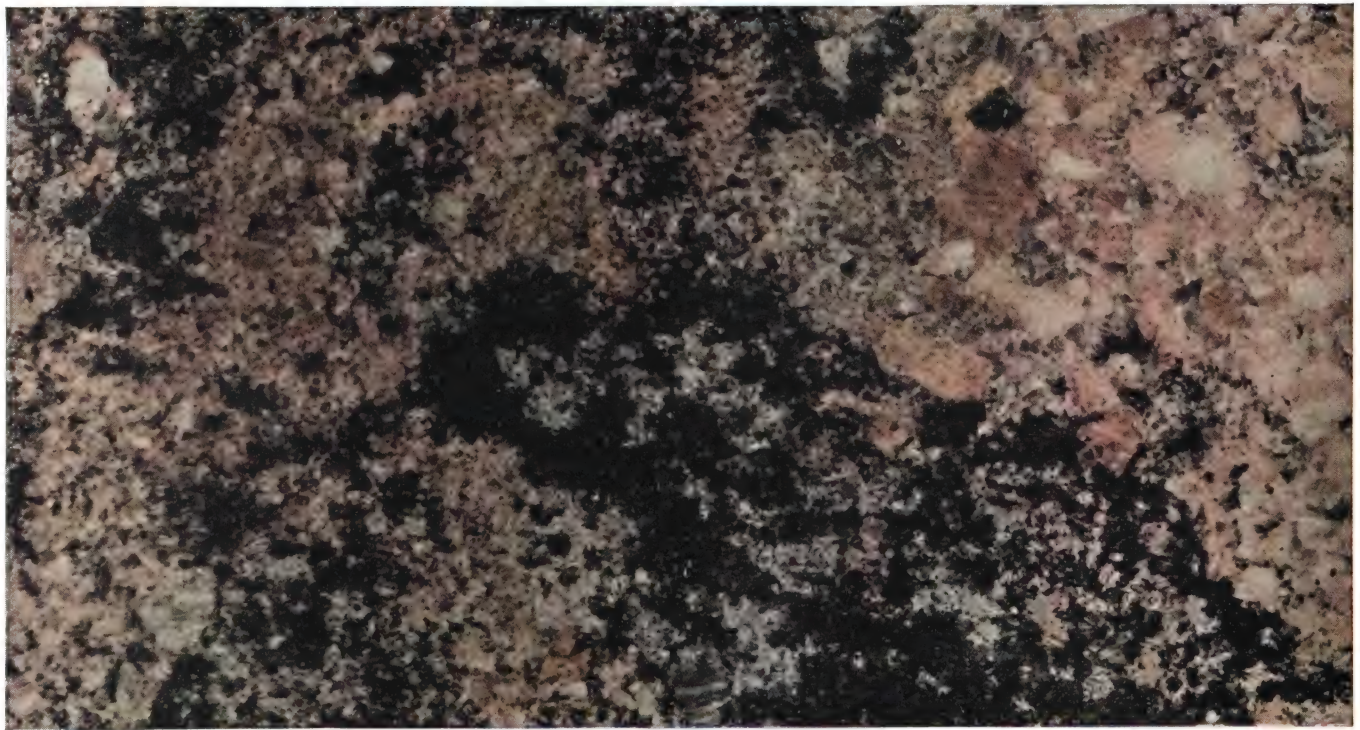
Outstanding Advantages and Economies

1. Permanence of color and finish.
2. Variety of colors and types of granite.
3. Saving in stock due to modern quarry methods.
4. Saving in manufacturing costs on return heads, etc., due to thinner stock.
5. All cutting, fitting, drilling, etc., is done at the plant with modern machinery, thus saving expensive field fabrication.
6. Saving in freight.
7. Saving in erection cost in handling and setting.

Prompt Shipments

Having furnished granite for hundreds of store fronts, we recognize the importance of maintaining opening dates in construction schedules, and therefore we:

1. Have a large supply of granite slabs on hand in the most popular sizes and thicknesses.
2. Have an experienced drafting department which will secure the necessary information in time for us to maintain prompt shipping dates.
3. Can make shipments on moderate sized jobs within three days after the receipt of all working information.
4. Can arrange for truck shipments to many parts of the country which assures transit time of from one to two days.



Cold Spring Rainbow Granite
Polished Finish

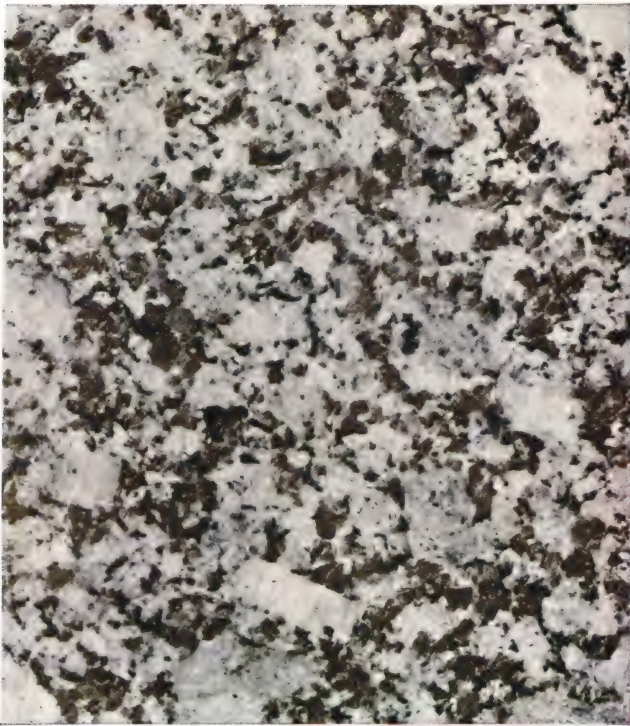


Cold Spring Rainbow Granite
Machine Smooth Finish



Cold Spring Pearl Black Granite
Polished Finish

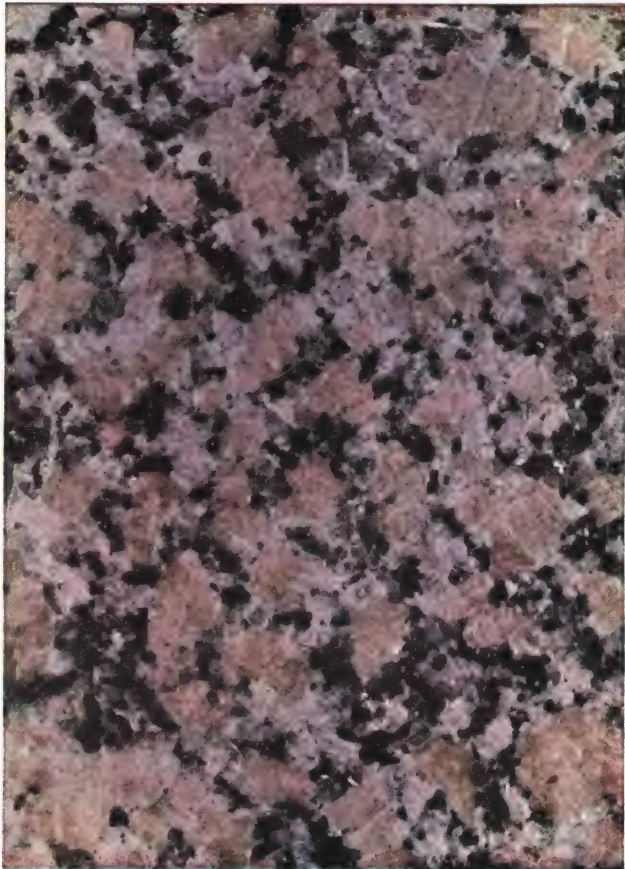
Produced only by Cold Spring Granite Co., Inc. Cold Spring, Minn.



Cold Spring Pearl White Granite
Polished Finish



Cold Spring Pearl White Granite
Machine Smooth Finish



Cold Spring Pearl Pink Granite
Polished Finish



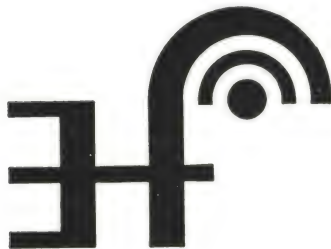
Cold Spring Pearl Pink Granite
Rubbed Finish

Produced only by Cold Spring Granite Co., Inc. Cold Spring, Minn.

H. E. FLETCHER COMPANY

Producers and Fabricators of Granite

WEST CHELMSFORD, MASS.



PRODUCERS OF

CHELMSFORD WHITE
CHELMSFORD GRAY
CHELMSFORD BULFINCH
MILFORD (N. H.) GRAY
MILFORD (MASS.) PINK

FABRICATORS OF

DEER ISLAND PINK
MILFORD PINK
SOMES SOUND, AND
ANY OTHER AVAILABLE GRANITES

QUARRY FACILITIES

Fifty years of quarry development have produced quarry faces containing millions of feet of granite, available for immediate quarrying under numerous derricks. New quarry methods eliminate high explosives which cause wasteful production.

FABRICATION FACILITIES

Gang saws, Carborundum saws, polishing wheels, sand blasts, surfacing machines.

With this extensive machinery and modern equipment we can produce any finish or texture on granite.

INSTALLATIONS

BUILDING	LOCATION	ARCHITECT OR ENGINEER
Boston Post Office	Boston, Mass.	Cram & Ferguson
P. O. Dept. Building	Washington, D. C.	Delano & Aldrich
U. S. Supreme Court Building	Washington, D. C.	Cass Gilbert, Jr. & J. R. Rockart, Cass Gilbert
New Jersey State Office Buildings	Trenton, N. J.	J. Osborne Hunt and Hugh A. Kelly
Pennsylvania State Capitol, West Approach,		
Office Building, South Office Building No. 2	Harrisburg, Pa.	Gehron & Ross
The Sailors and Soldiers Memorial Bridge	Harrisburg, Pa.	Gehron & Ross
		and J. E. Greiner Co., Engineers
New York State Office Building, Park Work	Albany, N. Y.	State Architect Wm. E. Hougaard
Philadelphia-Camden Bridge	Philadelphia, Pa.	Paul P. Cret, and R. Modjeski, Engr.
Federal Reserve Bank	Baltimore, Md.	Parker, Thomas & Rice
Federal Reserve Bank	Boston, Mass.	R. Clipston Sturgis
Ridge Road Bridge	Rochester, N. Y.	Gehron & Ross and Frank McKibben, Engr.
Hartford County Courthouse	Hartford, Conn.	Paul P. Cret and Smith & Bassette, Assoc.
New Orleans Post Office	New Orleans, La.	Supervising Architect of the Treasury
Thirty Columns in Facade, Treasury Building	Washington, D. C.	Supervising Architect of the Treasury
Lowell Post Office	Lowell, Mass.	Supervising Architect of the Treasury
Kansas City Post Office	Kansas City, Mo.	Supervising Architect of the Treasury
Fidelity Mutual Life Ins. Co., Building	Philadelphia, Pa.	Zantzinger, Borie & Medary
Wilkes-Barre Kingston Bridge	Wilkes-Barre, Pa.	Carrere & Hastings
Massachusetts State House Wings	Boston, Mass.	R. Clipston Sturgis
Lehman Hall, Harvard University	Cambridge, Mass.	Coolidge, Shepley, Bulfinch & Abbott
St. Louis Masonic Temple	St. Louis, Mo.	Eames & Young, Albert B. Groves, Assoc.
Metropolitan District Commission Building	Boston, Mass.	Densmore, LeClear & Robbins
Camden County Courthouse and Camden City Hall	Camden, N. J.	Edwards & Green
Olin Memorial Library	Middletown, Conn.	McKim, Meade & White
John W. Weeks Memorial Bridge	Cambridge, Mass.	McKim, Meade & White
Cottage Farm Bridge	Boston, Mass.	Desmond & Lord
Old First National Bank	Boston, Mass.	R. Clipston Sturgis
Shawmut National Bank Addition	Boston, Mass.	Parker, Thomas & Rice
Detroit Windsor Bridge	Detroit and Windsor	McClintic-Marshall Co., Engrs.
Outerbridge, Crossing	New York, N. Y.	York & Sawyer, N. Y. Port Authority
Goethals Memorial Bridge	New York, N. Y.	York & Sawyer, N. Y. Port Authority
Kill Van Kull Bridge	New York, N. Y.	Cass Gilbert, Inc., N. Y. Port Authority
Archives Building	Washington, D. C.	John Russell Pope
Cambridge Post Office	Cambridge, Mass.	J. D. Leland Co. and Charles R. Grecco

JOHN L. GOSS CORPORATION

Producers of "Goss Pink Deer Isle Granite"

QUARRIES AND HOME OFFICE
STONINGTON, MAINE

SALES OFFICE, 77 Summer Street, BOSTON, MASS.

SALES AGENTS

NEW YORK, N. Y., A. LePoidevin & Co., Inc., 286 Fifth Avenue
LOS ANGELES, CAL., Bly Stone Co., 1985 E. 16th Street

PHILADELPHIA, PA., Frank Williamson, 2302 Spruce Street
SEATTLE, WASH., Clark H. Grunewald, 314 Eitel Building

GOSS PINK DEER ISLE GRANITE

For Buildings, Memorials and General Construction—Polished, Hammered, Pointed or Rock-faced

Color, Texture and Finishes

Goss Pink Deer Isle Granite is a medium gray, colored with lavender pink feldspar. Polishing, which brings out the colors and develops an interesting pattern of crystals and markings, is recommended for base courses next to the sidewalk or where liable to become soiled.

A rubbed or honed surface gives some of the same advantages but does not have the high gloss.

For most general purposes and especially in connection with moulded members or carved details a hammered finish is advised.

A pointed surface has an interesting but inexpensive finish with strong texture.

It is sometimes possible to obtain astonishing reductions in cost by using granite veneer with sawed finish, large plain surfaces and details laid out for the carborundum machine.

We will welcome opportunities to consult with designers who would like to accomplish this.

Compressive Strength

Tests in the laboratory of Massachusetts Institute of Technology give an average compressive strength of 32,250 lbs. per sq. in. This is well above all structural or code requirements.

Where Obtainable

Any responsible manufacturer or dealer can supply this material. The rough granite and sawed slabs are shipped to finishing plants all over the country, which are equipped to furnish all classes of work. A large number of plants carry stocks on hand, and the quarry always stands ready to supplement these with prompt shipments of any sizes, shapes or quantities.

We will be pleased to assist you in getting in touch with subcon-

tractors in position to handle your particular project to best advantage, or to give preliminary estimates.

Production and Deliveries

The natural advantages of the quarry site—a free working formation, so located that the product travels the short distance to our tidewater dock by gravity—have been developed with the best modern equipment—derricks, compressors, air tools, granite saws, etc., which are constantly being improved, replaced and kept up-to-date.

This makes it possible to give prompt deliveries, on large or small orders, and to furnish monoliths of any size that may be desired. We ship by water directly from our quarry dock to seaport cities, or deliver to railroads at Rockland, Me.; Portland, Me.; Boston, Mass.; Philadelphia, Pa., and Wilmington, Del.

Specifications

Standard specifications will be forwarded on request. These may be detailed or in short form, as preferred.



Pioneer Monument, Harrodsburg, Ky.

FRANCIS KEALLY, Architect
Goss Pink Deer Isle Granite by A. LE POIDEVIN & CO., INC.

ULRIC ELLERHAUSEN, Sculptor

References

BUILDING
Stevens Hotel, Chicago, Ill.
Federal Reserve Bank, Boston, Mass.
Lafayette Building, Philadelphia, Pa.
Evans Memorial Galleries, Boston, Mass.
Insurance Co., of North America Building, Philadelphia, Pa.
Neils Esperson Building, Houston, Tex.
Southern California Edison Building, Los Angeles, Cal.
Security Trust & Savings Bank, Los Angeles, Cal.
Public Ledger Building, Philadelphia, Pa.
East Boston (Mass.) Savings Bank
Pilgrim Memorial Tower, Provincetown, Mass.
South Office Building, State Capitol, Harrisburg, Pa.
Merchants National Bank, New Bedford, Mass.

ARCHITECT
Holabird & Roche
R. Clipston Sturgis
John T. Windrim
Guy Lowell
Stewardson & Page
Eberson & Eberson
Allison & Allison
John Parkinson
Horace Trumbauer
Thomas James
Willard T. Sears
Arnold W. Brunner
Adden & Parker

BUILDING
Industrial Trust Building, Providence, R. I.
Security Building, Miami, Fla.
New York State Office Building, Albany, N. Y.
Salem Fields Entrance, Brooklyn, N. Y.
Fountain of Oceanus, Estate of John D. Rockefeller, Pocantico Hills, N. Y.
Drexel Bank Building, Philadelphia, Pa.
Mutual Trust Co., Philadelphia, Pa.
New York State Office Building, New York, N. Y.
Fountain Memorial to Pilgrim Women, Plymouth, Mass.
Pennsylvania R.R. Station, Philadelphia, Pa.
Post Office Department Building, Washington, D. C.
Internal Revenue Building, Washington, D. C.

ARCHITECT
Walker & Gillette
Robert Greenfield
Sullivan W. Jones
Percy W. Darbyshire
Welles Bosworth
Day & Klauder
Heacock & Hokanson and
The Ballinger Co.
{Sullivan W. Jones
{William E. Haugaard
McKim, Mead & White
Graham, Anderson, Probst & White
Delano & Aldrich
J. A. Wetmore

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TELEPHONE
MUrray Hill 2-2465

5619 Grand Central Terminal Building
NEW YORK, N. Y.

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Cold Spring, Minn.

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North Western Territory, Clark H. Grunewald, 314 Eitel Building,
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Cambridge, Mass., 52 First Street

THE HARRIS GRANITE QUARRIES CO.
Salisbury, N. C.
Western Sales Representative, J. K. Batchelder, Dixon, Ill.
Eastern Sales Representative, H. B. Whitehead, 101 Park Avenue,
New York, N. Y.

HASKEL PINK MILFORD GRANITE CO.
Milford, Mass.

S. HASKEL & SONS, INC.
Brooklyn, N. Y., 100 Harrison Place

MAINE & NEW HAMPSHIRE GRANITE CORP'N
North Jay, Me.
Branch Offices:
Redstone, N. H.
New York, N. Y., 280 Madison Avenue
Charles L. Strong, Representative
Pittsburgh, Pa., Century Building
J. F. Haldeman, Representative
Philadelphia, Pa., 1511 Real Estate Trust Building
Joseph M. Albright, Representative

THE NORTH CAROLINA GRANITE CORPORATION
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Branch Offices:
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Charles H. Gall, Representative
Philadelphia, Pa., 1001 Witherspoon Building
Thomas B. Marsh, Jr., Representative
Pittsburgh, Pa., 207 Fulton Building
Charles M. Tiernan, Representative
Baltimore, Md., James J. Miller, 1822 Bolton Street

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Representatives:
C. M. Weeks, 20 L Street, S. W., Washington, D. C.
Eric Wilson, 25 Laurel Street, Melrose, Mass.
J. F. Bradley, 246 W. Upsal Street, Philadelphia, Pa.
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J. D. SARGENT GRANITE CO.
Mount Airy, N. C.
Branch Offices:
Chicago, Ill., 127 No. Dearborn Street
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Thomas B. Marsh, Jr., Representative
Pittsburgh, Pa., 207 Fulton Building
Charles M. Tiernan, Representative
Baltimore, Md., James J. Miller, 1822 Bolton Street

THE JOHN SWENSON GRANITE COMPANY
Concord, N. H.
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Cleveland, Ohio, 2192 Taylor Road, East Cleveland
Exum M. Haas, Representative
Detroit, Mich., 439 Penobscot Building
J. W. Rollinson, Representative
Chicago, Ill., 921 Winona Avenue
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TEXAS PINK GRANITE CO., INC.
Marble Falls, Tex.
Sales Agents:
New York, N. Y., 509 East 233rd Street, Robert D. Clarke
New York, N. Y., 801 East 134th Street, Edward J. Davey, Inc.
Los Angeles, Calif., 678 S. Anderson Street, McGilvray Raymond
Corp'n
Fort Worth, Tex., Charles F. Roehl

WOODBURY GRANITE CO., INC.
Burlington, Vt., 206 Bank Street

EDWARD ARDOLINO, INC. (Carver)
New York, N. Y., 286 5th Avenue

The Association and Its Purpose

The chief aim of this Association is to further the use and sale of granite for building purposes by extending the knowledge of its many qualities and merits, and by establishing means of closer co-operation between producers of granite and architects and the general building public.

The Association offers an unbiased service to architects and others interested in the use of granite for permanent construction. This service is freely offered wherever it may assist in the logical and proper use of granite or help to solve the economic and aesthetic problems which may arise. Requests for samples and information will be handled promptly.

Natural Qualifications

Granite has exceptional strength and durability, is practically non-absorbent, and indefinitely withstands exposure to climate and weather. It is available in a wide range of colors and textures and has inherent beauty and character to be found in few other materials.

Granite is exceptionally well suited for use in buildings where the exterior facing serves as a decorative and protective veneer rather than as a structural element. Extensive development and use of saws and carborundum machines in the granite industry have made the furnishing of granite veneer both feasible and economical.

THE NORTH CAROLINA GRANITE CORPORATION

MOUNT AIRY, N. C.

BRANCH OFFICES

CHICAGO, ILL., 127 No. Dearborn Street

PHILADELPHIA, PA., 1001 Witherspoon Building
WASHINGTON, D. C., Allen J. Krebs, 636 Munsey Building

PITTSBURGH, PA., 207 Fulton Building

CUTSTONE DEPARTMENT: J. D. Sargent Granite Company, MOUNT AIRY, N. C.

Products

DIMENSION GRANITE for Buildings, Mausoleums, Monuments, Bridges, Dry Docks, etc.

Also Polished and Turned Granite; Granite Paving Blocks, Street Curbing, Crosswalk, Rubble Ashlar, Building Blocks, Crushed Granite and Rip Rap.

Colors and Texture of Mount Airy Granite

Mount Airy granite, "*The Granite of Individuality*," is a very light gray, almost white, biotite granite of medium texture. Feldspar, quartz and mica characterize the granite megascopically. The feldspar is nearly white, while the quartz is a blue gray and the mica black and very evenly distributed, giving an appearance of decided strong character.

The following Chemical Analysis and tests are significant:

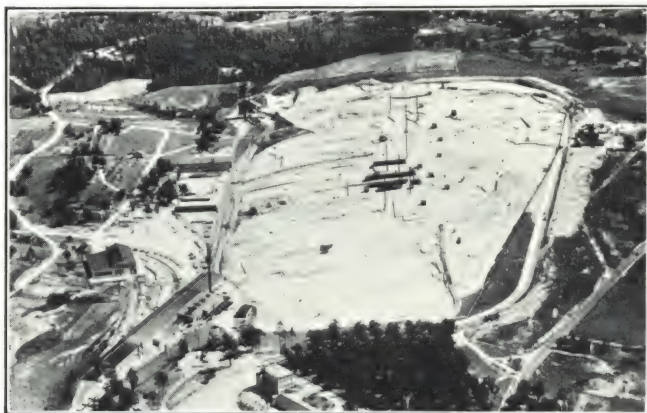
SiO ₂	70.70
Al ₂ O ₃	16.50
Fe ₂ O ₃	2.34
MgO	0.29
CaO	2.96
Na ₂ O	4.56
K ₂ O	2.45
FeS ₂	0.09
Total	99.89
Weight per cu. ft.	165 lbs.
Water absorbed per cu. ft.	0.33 lb.
Crushing strength.....	23,068 lbs. per sq. in.

From Bulletin No. 2, page 155, North Carolina Geological Survey, "The building and ornamental stones of North Carolina."

JOSEPH HYDE PRATT, State Geologist.

Facilities

Cutting plants and offices are strategically located at the base of the Mount Airy Quarries. Equipment is modern and complete. Electric traveling cranes, polishing machinery and turning lathes, sandblast and carborundum machines, gang saws, compressed air driven tools of all kinds; this equipment, together with the unlimited supply of rough granite available, enables large contracts to be executed in quick time.



An Aerial View of Quarry and Plant

Five hundred years at the present production rate of 3000 carloads per year will not have exhausted this great deposit of white Mount Airy granite

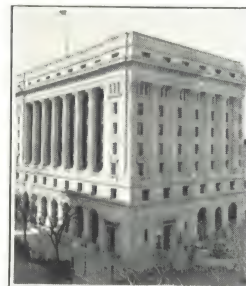
Buildings and Bridges

Quarry finishing plants and drafting departments are equipped to handle building and bridge jobs efficiently. Granite cut at Mount Airy is cut right.

The following references are significant:

Buildings

Union Trust Building, Washington, D. C.
Guilford County Courthouse, Greensboro, N. C.
Citizens National Bank, Long Branch, N. J.



Bridges

Arlington Memorial Bridge, Washington, D. C.
Fall Creek Bridge, Indianapolis, Ind.
Delaware River Bridge, Philadelphia, Pa.

Memorials

Mount Airy has been used in more private mausoleums than any other American granite. Its availability in uniform color and texture free from defects in sizes up to the limits of railway transportation has made Mount Airy Granite the choice for outstanding private and public monuments.

REFERENCES

O'Brien Mausoleum, Cincinnati, Ohio
Dodge Mausoleum, Detroit, Mich.
Rose Hill Mausoleum, Chicago, Ill.
Patterson Monument, Dayton, Ohio
Pennsylvania State Monument, Gettysburg, Pa.
Wright Brothers Memorial, Kitty Hawk, N. C.



Churches and Schools

The dignity and beauty of Mount Airy Granite has been made available to churches and school buildings through the development of economical materials. Our 1 & 2 Man Rubble, building blocks, and a sawed bed ashlar merit careful consideration. Write for samples and literature containing valuable information about broken range ashlar.



REFERENCES

St. Charles Borromeo Seminary, Overbrook, Pa.
Bethesda M. E. Church, Salisbury, Md.
St. Margarets R. C. School, Lancaster, Pa.
Church of the Holy Child, Philadelphia, Pa.
Residence C. W. Banner, Greensboro, N. C.

Estimates and Samples

A complete organization is maintained to furnish estimates, setting plans, details, etc., promptly and efficiently.

Preliminary estimates cheerfully furnished without obligations on request of architects or contractors.

Samples of Mount Airy Granite furnished on request, and advice as to grade or style of finish desired.

THE QUINCY QUARRIES COMPANY

Producers of Hitchcock Supreme Quincy Granite

276 Quarry Street, QUINCY, MASSACHUSETTS

QUINCY IS THE STANDARD GRANITE



HITCHCOCK IS THE STANDARD QUINCY

Products

HITCHCOCK SUPREME

QUINCY GRANITE

Seamface

Polished

Hammered

Rock Face

The East River Savings Bank

Illustrates the effective use of Hitchcock Polished Granite for entrance ways and designs.

In specifying Hitchcock Supreme Polished Quincy Granite, you have the complete confidence that it will come clear, clean, and free from blemishes. The blue-gray stone has a mirror-like effect that the elements never rob of its luster. An application of soap and water removes dirt and restores the brilliant surface.



Entrance to East River Savings Bank



Insignia, East River Savings Bank, New York, N. Y.
WALKER & GILLETTE, Architects

The mineral constituents of Hitchcock Supreme Quincy Granite (feldspar, smoky quartz and hornblende) make this the ideal granite for all construction. Polished, it provides the desired contrast to all other building materials as well as to Hitchcock Hammered finish. Hammered, it has a beautiful medium to light gray tone.

Hitchcock Supreme can be produced in any quantity and size up to the limits of transportation. Deliveries can be made as required.

*When you specify Seamface, designate Hitchcock Seamface from the Quincy Quarries.
Its dark tone harmonizes with architectural designs of every description*

A Recent List of
Buildings in Which

HITCHCOCK SUPREME QUINCY GRANITE

Has Been Used

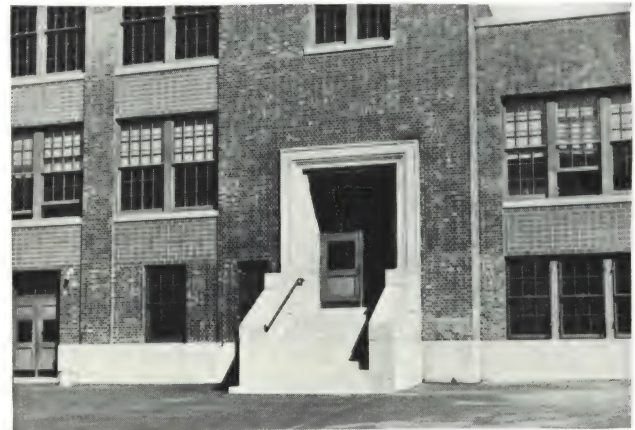
GEORGE H. WHITE FUND PRADO
Boston, Mass.
Arthur & Sidney Shurcliff, Architects

NAHATAN STREET BRIDGE
Norwood, Mass.
William D. Upham,
Associate Architect

GATE HOUSE BILLS BROOK DAM
Metropolitan District Commission
Water Department, Hartford, Conn.

NORTH QUINCY HIGH SCHOOL
Quincy, Mass.
Cooper Associates, Architects

NORTHERN BOULEVARD AND
ASTORIA BOULEVARD BRIDGE
Long Island, New York
New York State Department of Public
Works, Highway Division



Joyce Kilmer School, West Roxbury, Mass.
HARRISON H. ATWOOD, Architect

The above illustration of one of the most recently completed schools in Boston not only shows the added appearance of strength that is obtained by the use of Hitchcock base courses, but also illustrates the contrast resulting from the use of Hammered Hitchcock to set off the brickwork. The architect knows that this granite base can withstand the terrific abuse that will be heaped upon it by the weight of the building and inclement weather.

Sole Producers of Extra Fine Grained Blue-White Westerly Granite
Known as Sullivan-Westerly Granite

WESTERLY, R. I.

SULLIVAN-WESTERLY GRANITE

One Quality—One Price—One Name—Always the Same

We quarry EXTRA FINE GRAINED BLUE-WHITE WESTERLY GRANITE for Mausoleums, Monuments, Statues and other Memorials. Trade name SULLIVAN-WESTERLY GRANITE.

Character of Granite

It is the appropriateness of the design, the quality of the granite, and the excellence of the workmanship, that determine the worth of a memorial.

Visit any cemetery and you will note that Sullivan-Westerly Granite stands out from all other granites in beauty and distinction. In fact, its desirability is so apparent that to see memorials of this granite is to be positively assured of its unequalled quality and beauty. Its obvious merit creates its demand.

Sullivan-Westerly Granite, quarried since 1837, has long been proved absolutely dependable in every respect for a thoroughly satisfactory memorial. It is a hard, dense, exceedingly fine grained granite, very white in color, and totally free from all mineral substances which cause deterioration.

The specific gravity of Sullivan-Westerly Granite is 2.654, which is equivalent to 165 pounds to the cubic foot. The crushing strength of Sullivan-Westerly Granite is 29,500 pounds per square inch, making our granite particularly suitable for large memorials and mausoleums.

It has long been acknowledged the handsomest and finest of memorial granites.

Largest Blocks Available

It is not unusual for us to ship blocks weighing from fifty to sixty tons. Our quarry derricks deliver the



stone direct on the cars. Our own tracks are connected with the main line of the New York, New Haven & Hartford Railroad. In every detail the equipment of the SULLIVAN GRANITE COMPANY is such that we can fill all orders, up to the limit of transportation, promptly and satisfactorily.

Value of Correct Design

The selection of a memorial is an important matter. Your object is to honor the dead, to mark a last resting place suitably, in a permanent and dignified manner.

What a feeling of reverence and respect is inspired when we look upon the memorial that is beautiful and fitting, be it elaborate or modest in its proportions. Our cemeteries show too few examples of these worthy tributes to our dead, memorials of true and enduring beauty.

It is well to remember that size has no bearing as a measure of value. A smaller memorial of absolute worth—positive in the quality of permanence, perfect in every detail—is of infinitely greater value than a larger memorial of ordinary grade.

One Grade Only

Only one grade of Sullivan-Westerly Granite, of unvarying fine quality, is sold; at one standard price to all, as per price list. When Sullivan-Westerly Granite is specified for your memorial, you get this one grade of perfect granite. On request, a Certificate is furnished, to be delivered to you, guaranteeing that the granite used in your memorial is Sullivan-Westerly Granite.

LONG LIFE TERRAZZO FLOORS

Westerly granite granules are the best adapted for terrazzo work where long wear and beauty of color is desired.

Our granite has a crushing strength of 29,500 pounds per square inch. At the same time it machine rubs well and can be used with marble, thus

giving longer life to such floors, or it can be used by itself as desired by the architect.

Prepared in sizes 1, 2 and 3 and in colors from blue to pink.

Particularly adapted for floors subject to trucking or other hard wear.

ALBERENE STONE CORPORATION OF VIRGINIA

419 Fourth Avenue, NEW YORK, N. Y.

ATLANTA, GA.
BOSTON, MASS.

CHICAGO, ILL.
CLEVELAND, OHIO
FORT WORTH, TEX.

LOS ANGELES, CAL.
NEWARK, N. J.
NEW ORLEANS, LA.

PHILADELPHIA, PA.
PITTSBURGH, PA.
RICHMOND, VA.

ROCHESTER, N. Y.
WASHINGTON, D. C.

QUARRIES AND MILLS AT SCHUYLER, VA.

Alberene Soapstone

Alberene Soapstone, natural quarried stone of medium hardness, blue-gray in color, produced and fabricated for Exterior Trim of all kinds, including Spandrels, Sills and Stools, Base, Plinths and other Interior Trim; Fireplace Linings, Hearths and Facing; Chemical Laboratory Work; Toilet and Shower Compartments.

Virginia Alberene Stone

Alberene Stone, selected stone of extreme hardness, reserved exclusively for Stair Treads, Landings, Platforms, Borders and Flooring. Its rubbed-finish, highly-toothed surface remains non-slip whether wet or dry. Abrasive tests of Alberene Stone show the highest durability factor on the U. S. Bureau of Standards scale of any natural stone commercially used for these purposes.

Virginia Black Serpentine

A natural stone of the serpentine family. Becoming extremely popular because its polished black surface affords excellent contrasts for modern design. Its high resistance to weather-action makes it desirable for exterior as well as interior use. When sand-blasted, the fine tracery of the designs stands out against the polished black surface.

Physical Properties of Alberene

All Alberene Stone is homogeneous and finely granular in all directions, dense and non-stratified, free from

cleavage lines, easily cleaned and kept clean. Alberene Soapstone is easily machined—bored, slotted, grooved, tongued, turned—without splitting or chipping.

Color Value of Alberene

There is a wide variety of tones and textures in this natural stone and we suggest that you send for a copy of "Architectural Alberene," which contains plates in full color.

Manufacturing Facilities

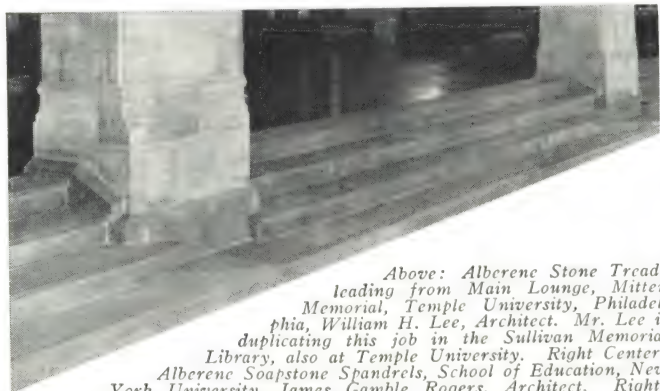
Quarries and Mills at Schuyler, Va., are largest in the world devoted exclusively to production and fabrication of special purpose stone. Private railway connects with main lines of C. & O. and Southern Systems. Prompt delivery, uniformity of workmanship and finish assured.

Typical Spandrel Installations of Alberene Soapstone

Buffalo City Hall, Buffalo, N. Y.
Newark & Essex Bank Building, Newark, N. J.
Huron & Erie Building, London, Ont.
Westchester County Office Building, White Plains, N. Y.
Stump & Walter Co. Building, New York, N. Y.

Typical Installations of Virginia Black Serpentine (Exterior)

U. S. Post Office, Cambridge, Mass.
Rundell Memorial Library, Rochester, N. Y.
U. S. Parcel Post Building, Richmond, Va.
Miltner Berger Memorial Home, New Orleans, La.
Continental Building, Dallas, Tex.



Above: Alberene Stone Treads leading from Main Lounge, Mitten Memorial, Temple University, Philadelphia, William H. Lee, Architect. Mr. Lee is duplicating this job in the Sullivan Memorial Library, also at Temple University. Right Center: Alberene Soapstone Spandrels, School of Education, New York University, James Gamble Rogers, Architect. Right: Virginia Black Serpentine Spandrels, with sand-blasted design, Reynolds Arcade, Rochester, N. Y., Gordon & Kaelber, Architects.



VIRGINIA GREENSTONE COMPANY, INC.

Quarriers and Finishers of Virginia Greenstone

LYNCHBURG, VIRGINIA

VIRGINIA GREENSTONE

A Beautiful Permanent Stone—Non-Fading for Exterior Uses—Non-Slip for Treads and Floors

Description

Virginia Greenstone is a gray-green building stone which belongs in the same general group of metamorphic rocks as soapstone but, due to the high ratio of actinolite to the chlorite (often three to one), Greenstone is unusually tough, resistant to abrasion and durable.

In color the stone is generally gray green, but the exact shade and texture of the dressed stone depends upon whether it is gang-sawed, sand-rubbed, honed, polished, sandblasted or carved. Slabs sawed parallel to the rift bring out the texture of the stone to the fullest extent; edge grain slabs are used for some purposes.

Uses

Virginia Greenstone is suitable for all common architectural uses, both exterior and interior. Exterior adaptations include spandrels, stone veneer, base courses, store fronts, sills, lintels, coping, flagging, garden furniture, roofing tile, memorials, and mausoleums. It is adaptable also for interior work, especially for floor tile, stair treads and landings, sanitary partitions, wainscoting, bases, thresholds, plinths, trim, window sills, aprons, mantels and hearths.

The Allied Arts Building, a 17-story structure at Lynchburg, shown below, is supplied with Virginia Greenstone. More than 5,000 cubic feet of dressed stone was used in its construction, both for exterior and interior purposes. The building is located in downtown Lynchburg, and the vertical emphasis supplied by the



Quaker Meeting House, Lynchburg, Va.

Erected 1757. The greenstone used is still in good condition and retains its color

greenstone spandrels in combination with buff brick makes the building stand out prominently from every vantage point.

Properties

The strength of Virginia Greenstone is entirely adequate for all ordinary purposes. Tests by the Department of Purchase, City of New York, on specimens 11/4x4x14 in. showed transverse strengths of two samples as 1480 and 1240 pounds, respectively. The compressive strength of 14 specimens averaged 8010 pounds per square inch. Tests by other laboratories and the behavior of the stone in load-bearing uses substantiate these figures.

Absorption of the stone is low, results of tests on typical samples ranging from 0/17 per cent of moisture, by weight, after 24-hour immersion to 0/22 per cent after 14-day immersion. Tests also show excellent acid and alkali resistance, making the stone exceptionally suitable for laboratory uses.

Users

Virginia Greenstone has been used in a wide variety of projects and for many purposes. A few installations on Government buildings are listed below.

Users

Service

The VIRGINIA GREENSTONE COMPANY, INC., will be pleased to furnish samples and additional information regarding this unusual stone and will welcome an opportunity to co-operate with architects at any time.

Service

Users

List of Completed Government Buildings

EXTERIOR

Window Spandrels

- U. S. Appraisers' Stores, Baltimore, Md.
- U. S. Post Office, Columbus, Ohio
- U. S. Post Office, Wilkes-Barre, Pa.

INTERIOR

Stair Treads, Borders, Floors

- U. S. Post Office, Dubuque, Iowa
- U. S. Post Office, Greensboro, N. C.
- U. S. Post Office, Mt. Airy, N. C.
- U. S. Post Office, Lynchburg, Va.
- U. S. Post Office, Danville, Va.
- U. S. Post Office, Culpeper, Va.
- U. S. Post Office, Urbana, Ohio
- U. S. Post Office, Erie, Pa.
- Archives Building, Washington, D. C.
- U. S. Department of Justice Building, Washington, D. C.
- White House, Washington, D. C. Fireplace facings.

Laboratory Equipment

- National Institute of Health, Washington, D. C.
- Veterans Hospital, Canandaigua, N. Y.
- Veterans Hospital, Indianapolis, Ind.
- Naval Academy, Annapolis, Md.
- Howard University, Washington, D. C.



Allied Arts Building,
Lynchburg, Va.

JOHNSON & BRANNAN,
Architects
C. W. HANCOCK & SONS,
Contractors



Holy Cross Catholic Church, Lynchburg, Va.

Steps at entrance of above church show no signs of wear after 50 years of daily use. The Greenstone still has a non-slip surface. Average traffic 2000 persons per week

THE BRIAR HILL STONE CO.

Golden Buff and Variegated Sandstone; Golden Tone Ashlar Wall Facing
GLENMONT, OHIO

Briar Hill Golden Tone Sandstone

Briar Hill Golden Tone Sandstone—rough blocks, semi-finished, ashlar, stone-brick, or cut and carved ready to set in accordance with plans and specifications.

Readily available in practically any locality.

Varieties—Golden buff, variegated in either light or dark shades, and “run of quarry” which comprises all colors. Each hue is tinged with an exquisite, subdued golden tone. Variegations consist of banded, mottled, speckled and clouded markings in an infinite variety of patterns and combinations. For this reason it is practical to select for color only in a very general way.

Adaptability—Suitable for all classes of buildings, both for interiors and exteriors; effective as trim for seam face granite, field stone, brick or stucco, and especially adapted to gothic architecture, because of its easy working qualities.

Durability—Briar Hill Sandstone is permanent in



texture and color. Positive proof of this is offered by an old church at Glenmont, cornerstone of which is shown on next page. Built of stone from this quarry in

1857, the original tool marks remain clean cut and sound. Age merely mellows the beauty of this colorful stone.

Physical and Chemical Properties—Results of physical and chemical analyses, compression, freezing and absorption tests gladly furnished on request.

Quarry—Our vast quarry holdings insure a practically unlimited supply of this stone.

Facilities—Our quarries and mill are thoroughly equipped with modern machinery, capable of handling any size project. Prompt, efficient execution of contracts assured at all times.

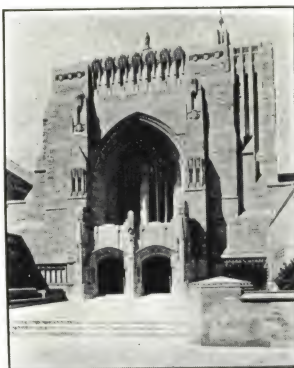
Price—Although distinctive and yielding infinite color resources to the architect's skill, Briar Hill Stone is reasonable in cost. It is, therefore, economically available for all classes of buildings.



Briar Hill Golden Buff



Briar Hill Variegated (lighter shades)



Entrance Detail—
Sterling Memorial Library
Yale University
JAMES GAMBLE ROGERS, ARCHITECT



Briar Hill Variegated (darker shades)



San Diego Trust & Savings
Bank, San Diego, Calif.
WM. TEMPLETON JOHNSON,
ARCHITECT

Color Illustrations about 1/6 actual size



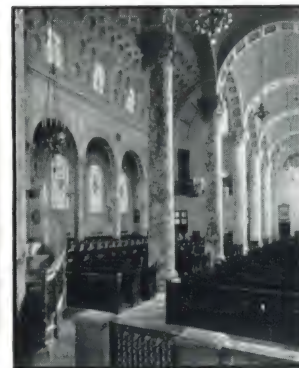
Dayton Art Institute
Dayton, Ohio

EDWARD B. GREEN & SONS AND
ALBERT HART HOPKINS, ARCHITECTS



Edsel Ford Residence, Gaukler Pointe, Mich.

ALBERT KAHN, INC., ARCHITECT



Immaculate Conception Church, Waterbury, Conn.

MAGINNIS & WALSH,
ARCHITECTS



Payne Whitney Gymnasium, Yale University

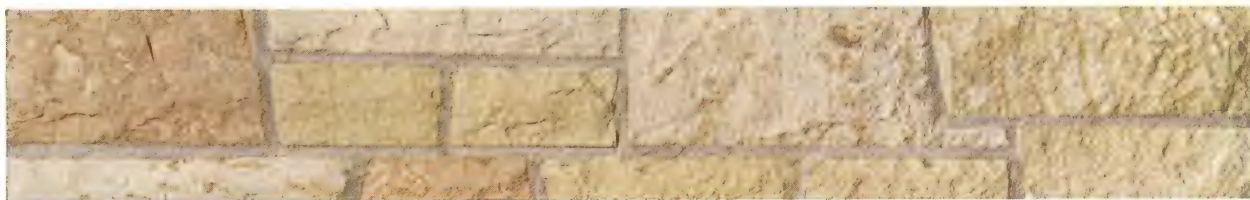
JOHN RUSSELL POPE, ARCHITECT



Temple Beth Israel, Portland, Ore.

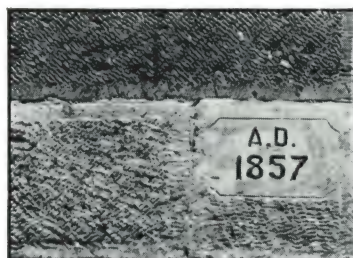
MORRIS H. WHITEHOUSE & HERMAN BROOKMAN,
ASSOCIATE ARCHITECTS

Briar Hill Ashlar Adds Charming Individuality to Every Home



E. S. Warner Residence
Shaker Heights, Ohio

CHAS. R. GRECO, ARCHITECT,
EDWARD G. REED, ASSOCIATED



Cornerstone, Old Church
Glenmont, Ohio

Original tool marks remain clean cut and sound

NOW this virgin stone with its warm, friendly tones can be employed as exterior Ashlar Wall Facing. Usually furnished four inches thick, to give each home a well-built appearance at very reasonable cost. Its diversity of fine surface textures, rich variety of blending tints, convenient random lengths and variable course heights, offer a gloriously wide range for original and exclusive effects. It can be rapidly cut and laid in many charming effects by stonemasons or bricklayers without requiring any predetermined pattern. To harmonize with each type of architecture, this stone is available in sand, shot sawed, and split-faced finishes or textures.

Old Buildings Can Be Modernized in Appearance with *Colorful* Natural Stone—at Moderate Cost

Briar Hill Golden Tone Ashlar is also economically available everywhere for modernizing, renewing the youthful appearance of aged structures—as well as individualizing new ones—simply by covering the old exterior with this colorful stone facing four inches thick.

Architects Invited to Write for this Free Ashlar Booklet

Our new Ashlar Wall Facing Booklet illustrates numerous Briar Hill houses, pictures the stone in its own lovely coloring and contains many valuable suggestions. A copy will be sent to any architect for the asking. We will gladly estimate the cost of your buildings—individualized or modernized—with Briar Hill Golden Tone Sandstone. Just send us your blueprints—no cost or obligation.

AMERICAN BLUE STONE COMPANY

PRODUCERS OF THE ONLY GENUINE GENESEE VALLEY BLUE STONE;
THE OLD DARK "NORTH RIVER" BLUE STONE AND NATURCLEFT FLAGGING

SALES OFFICES

101 Park Avenue, NEW YORK, N. Y.

QUARRIES AND MILLS: AMBLUCO, WYOMING CO., N. Y. and SOUTH UNADILLA, DELAWARE CO., N. Y.

Products

GENESEE VALLEY BLUE STONE, a New York State light blue stone from deep hard deposits for architectural exterior and interior building construction.

"NORTH RIVER" BLUE STONE, an Eastern New York State dark, hard blue stone for exterior building work.

*NATURCLEFT FLAGGING for Garden Walks, etc.

For AMBLUCO Non-slip Treads, Landings, Flooring, Thresholds and Wall Base for interior and semi-interior uses, see File Index.

*Reg. U. S. Pat. Office.

Facilities

This company was organized and opened its first quarry in 1899. Later it purchased the Genesee Valley Blue Stone Company's property of about 200 acres and extensively developed the quarries which had been in operation since 1868 at what is now Ambluco, Wyoming County, N. Y. Later, "North River" Blue Stone quarries were purchased and also worked on a substantial basis in the foothills of the Catskill mountains.

At both quarries mills and yards are equipped with modern machinery. Large volumes of business can be shipped without delay. Sawed stock can be easily finished up by local cut stone contractors.

Genesee Valley Blue Stone

Color and Texture—A distinctive uniform shade of light blue, blending well with adjacent light colored surfaces, or giving a sharp clean contrast with dark materials. It is of a fine grain and even texture, being made up mostly of pure hard quartz as shown below.

MINERALOGICALLY CONSIDERED

Fine hard sand, mostly quartz.....	70%
Clay, as binding material.....	28%
Water	2%

In this blue stone, quartz, the essential constituent, being harder than the accessory minerals, is pre-eminent on the wearing surface, which makes the stone slip-proof and very durable.

Strength, Weight and Fire Resistance—Few, if any, stones have a greater crushing and transverse strength than this blue stone. Likewise, the stone has high tensile and shearing strengths. The following table gives its crushing strength, as compiled from tests made by the United States Ordnance Department:

CRUSHING STRENGTH

Rockport granite (Kidder's Hand Book).....	17,750 lb. per sq. in.
Vermont marble	Average 13,500 lb. per sq. in.
Genesee Valley blue stone	19,970 lb. per sq. in.

Although of great density, it weighs only approximately 150 lb. per cu. ft. when cut ready to set. It offers great resistance to extreme heat, and the dielectric strength test is among the highest of all natural stones.

Durability—Specimens of this blue stone have been critically and carefully analyzed by eminent mineralogists and pronounced one of the most durable of all stones. In abrasive tests it excels most other stones. Like all stones, it should be cut to set on its natural bed.

It is said by one who has been in the business all of his life and who has made careful study of the stone edifices in Europe, that this Genesee Valley Blue Stone

is very much the same as the stone in the famous stairway of the court in Bargello Palace, Florence, Italy.

CHEMICAL ANALYSIS

Silica	76.50%
Alumina	14.75%
Oxide of iron	6.35%
Water	2.00%
	99.60%

Adaptability—Genesee Valley Blue Stone is a liver rock and does not produce natural split flagging and curbing. It can be fabricated and carved for practically any architectural work. The sheets of stone in these AMBLUCO quarries, being of unusually low levels, represent early deposits and are, therefore, much harder and more compact than stone quarried from higher levels.

Cutter and Sawed Face Ashlar

Even more artistically effective than seam face granite, cutter face (vertical seam face) blue stone ashlar has been worked into buildings of the early American farm house and English Tudor styles. These cutter faces are permanently and beautifully stained many colors and soft shades, producing an old tapestry design when laid random. Also the combination of sand sawed and shot sawed faces furnishes a pleasing relief from the smooth planed and rubbed finishes.

"North River" Blue Stone

Color, Texture, Etc.—Although nearly uniform in color, slight variations in shades from dark gray blue through blue to purplish dark blue breaks the monotony of a stone of uniform color and eliminates artificial imitations. "North River" Blue Stone is of fine grain and even texture, containing about 78% silica, making the stone non-slip at all times.

Durability—The record of nearly a century of use of "North River" Blue Stone speaks for itself. Authentic knowledge of this blue stone places it ahead of all stones for hardness, enduring and non-slip qualities for use as exterior door sills, steps, platforms, etc.

Specification Suggestions for Exterior Use

Genesee Valley or "North River" Blue Stone should be specified, and to guard against substitution of inferior blue stones, mention this company's name and address as producers.

Specifications should require all blue stone (as well as most other stones) to be thoroughly seasoned and to be cut so as to set on its natural bed, especially when used for grade courses.

The practical finishes, in order of their costs are: Sand sawed; shot sawed; rock face; wet sand rubbed; fine axed (6-cut); horizontally (machined) tooled; and vertically (hand) tooled. These blue stones also take most any finish applied to a natural stone. The sand sawed finish, showing no saw marks, is very uniform and brings out the character of the stones. This is produced by a slow process and does not burn and bruise the surface of a stone as does planing and axing.

Naturcleft Flagging

A natural split flagstone of definitely known qualities from the finest quarries in New York. Its many soft mellow color tones are unequalled by any other similar material. Specify Naturcleft Flagging as furnished by the AMERICAN BLUE STONE COMPANY, New York, N. Y., and be sure to get the genuine.

Co-operative Service

Our organization, through its members' lifelong experience with blue stone, offers its knowledge in an impartial manner, unbiased by thought of personal profit.

AMERICAN TERRA COTTA CORPORATION

TELEPHONE
FRanklin 1467

Builders Building, CHICAGO, ILL.

FOUNDED 1881

AGENCIES IN PRINCIPAL CITIES

Indianapolis Terra Cotta Company, Inc.

2228 North Olney Street, INDIANAPOLIS, IND.

Architectural Terra Cotta

American Terra Cotta, for more than 50 years, has been recognized as a building material of the highest quality for decorative trim or entire wall facing of exteriors and interiors. Available in any variety of shapes and designs, plain and decorative, with the added advantage of unlimited choice in permanent ceramic colors and finishes, it enables the architect to give the most diversified expression to his conceptions of both form and color.

Other Products

Swim Pool Rails, Steps, Ladders, Cove Base and Pool Lining; Garden Pottery; Decorative Pottery; and Chimney Pots.

Colors and Finishes

All American Terra Cotta Products can be furnished in a wide range of permanent colors, in plain, mottled or polychrome effects, and in unglazed, non-reflecting glaze, or bright glazed ceramic finishes. Two-burn colors, such as Brilliant Red, Ceramic Gold and Ceramic Silver, are also available on specification.

Wall Block Sizes

Standard units are 8 x 16 $\frac{1}{4}$ in. and 2, 4 or 6 in. in thickness. Units of 12 x 24 in. are also available. Other sizes, when required, can be furnished at a slight increase in cost.

American Wall Block

American Wall Block offers a distinct price advantage, where plain wall surfaces predominate, because it is mechanically made, in standard shapes on a quantity production basis. It is used for facing exterior and interior walls and partitions, either as a veneer or a self-supporting wall.

The standard unit is 8 in. x 1 ft. 4 $\frac{1}{4}$ in. and 2, 4 or 6 in. in thickness, with solid back, scored for plaster or for bonding with brick or tile. Cove base, cap mouldings, mitres and special shapes are also available. Smaller or larger sizes may be had at a slight difference in cost. Each unit is ground on all

edges to assure uniform jointing and economical erection. American Wall Block, available in a wide range of permanent colors, makes attractive, fire-resistant, permanent and sanitary walls, practically possible at low cost and with no upkeep other than an occasional washing.

American Wall Block can be used to advantage in any building having large plain wall surfaces, as in lobbies, corridors, stair halls, laboratories, large toilets, etc., where economy, permanence and sanitation are essential.

Information, Prices and Literature

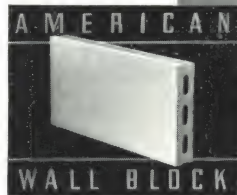
Technical information about the proper use and specification of our products will be furnished promptly, upon request; for definite prices, send us complete plans and specifications; approximate prices, if desired, can be furnished from preliminary drawings or sketches; write for catalogues of American Wall Block, Garden Pottery and Chimney Pots.



Corridor—Rufus King High School, Milwaukee, Wis.

Guy E. WILEY, Architect

A particularly fine example of American Wall Block in schools. The color is a dark cream-tan in non-reflecting glaze. Note the effectiveness of the vertical treatment



Representative Installations of American Wall Block

NAME	LOCATION	ARCHITECT
Rufus King High School	Milwaukee, Wis.	Guy E. Wiley
Nurses' Home, Cook County Hospital	Chicago, Ill.	Eric E. Hall
Manteno State Hospital	Manteno, Ill.	{Edwin H. Clark
Department of Labor and I.C.C. Building	Washington, D. C.	{C. Herrick Hammond
Cermak Pumping Station	Chicago, Ill.	Arthur Brown, Jr.
Administration Building	Fort Sill, Okla.	Paul Gerhardt, Jr.
John Gaston Hospital	Memphis, Tenn.	Leon B. Senter
Rosemont Jr. High School	Fort Worth, Tex.	Walter F. Schulz
Wyandotte High School	Kansas City, Kan.	Elmer G. Withers Co., Inc.
Fire Station	Chicago, Ill.	Hamilton, Fellows & Nedved
U. S. Post Office	Topeka, Kan.	Paul Gerhardt, Jr.
Sheboygan Memorial Hospital	Sheboygan, Wis.	L. A. Simon
		Schmidt, Garden & Erikson

ATLANTIC TERRA COTTA COMPANY

ESTABLISHED AT PERTH AMBOY, N. J., IN 1846

19 West 44th Street, NEW YORK, N. Y.

PLANTS: PERTH AMBOY, N. J.; TOTTEVILLE, S. I., N. Y.; ROCKY HILL, N. J.

REPRESENTATIVES IN MOST PRINCIPAL CITIES

ATLANTA TERRA COTTA COMPANY, P. O. Box 189, EAST POINT, GA.

Atlantic Architectural Terra Cotta

A building material for exterior and interior construction and decoration, made in ashlar and any form of modeled and sculptured ornament and in any color or combination of colors.

Atlantic Terra Cotta is permanent, fire resistant, light in weight, economical in cost and possesses great insulation value against heat, cold and sound. It is used for the complete exterior of a building or for the spandrels, entrances, parapets, copings, cornices, decorative inserts—wherever permanence, the beauty of color or extensive modeled design is wanted.

Colors

The use of color is one of the tenets of modern architecture and Atlantic terra cotta can be obtained in any color that may be desired—pastel shades, brilliant Faience and rich mottled Abbochromes.

Chimney Pots of Atlantic Terra Cotta

Reproductions of Tudor, Elizabethan and Georgian models, unique in the fact that they are obtainable in any desired color. There are 31 standard designs in a complete range of flue sizes. Special designs made to order.

Atlantic Roof Tile

Classic pan and cover glazed roof tile in color of suitable scale for monumental buildings, as used on the Pennsylvania Museum of Art, Philadelphia, Pa.; the State Capitol at Charleston, W. Va.; the new U. S. Supreme Court, Washington, D. C. and others.



Established
1846

Garden Pottery of Atlantic Terra Cotta

Reproductions of rare and artistic urns, jars, pedestals, fountains, etc. Available in all Atlantic colors and finishes. Atlantic pottery is used not only in gardens, but also as decorative furnishings for lobbies, loggias, etc. Special designs made to order.

Wall Units of Atlantic Terra Cotta

Mechanically made Terra Cotta blocks used for the construction and facing of exterior and interior walls and partitions. Obtainable in 5x8, 5x12, 6x9, 8x8, 8x16, 9x14, 12x24, 15x15, 15x30 ins. and other sizes in thicknesses of 1, 2, 3, 4, and 6 ins. Each unit is ground to size and squared, assuring perfect jointing and economical erection. Made with closed backs, either scored to take plaster or with a smooth glazed surface. Standard cap units, miters, jambs, sills and lintels are also available.

Atlantic wall units are low in price. They have all the qualities of Atlantic architectural terra cotta and have a place in every type of building. Attractive, practical, fire resistant and sanitary, there actually is no limit to their use.

New Products—Non-absorbent terra cotta body which is most appropriate for installations requiring a facing material absolutely impervious to water. We recommend them unqualifiedly for tunnels, subways as well as swimming pools and other such applications.



New Greyhound Bus Terminal, 248 West 34th Street, New York, N. Y.

THOMAS W. LAMB, INC., Architect

This modern building in the heart of Manhattan faced with Atlantic Structural Wall Ashlar, Coping, etc., in standard "Greyhound" color. Lettering and greyhounds produced by Atlantic pictorial process

Veneering unit—one inch in thickness, especially suitable for remodeling purposes and for the facing of bathrooms and kitchens.

Structural Load Bearing Wall Unit—Having only 25% of voids. Used as part of wall construction, complying with New York City Building Code requirements. (See illustration above.)

Pictorial reproduction—three new methods of reproducing pictorial designs without the use of modeled relief. Appropriate for moulding courses, for friezes or for complete ceiling or mural decoration.

Atlantic wall units with fluted and contoured surfaces for piers, pilasters and decorative wall surfaces.

Literature

Illustrated booklets and folders for every building requirement can be furnished by the ATLANTIC TERRA COTTA COMPANY. Issued at intervals is our magazine, *Atlantic Terra Cotta*, containing illustrations of the finest Atlantic installations in contemporary architecture.

Any of the above as well as catalog of Chimney Pots, Garden Pottery, Roof Tile and other specialties will be furnished on request.



New United States Court House, New York, N. Y.

CASS GILBERT, INC., Architect

This beautiful pyramid roof is of Atlantic Terra Cotta. On the pyramid a delicate turquoise blue glaze is used as background for the gold glaze on the vertical panels and borders. The lantern is done entirely in gold glaze

EASTERN TERRA COTTA COMPANY

TELEPHONE
Stillwell 4-7400

401 Vernon Avenue
LONG ISLAND CITY, N. Y.

PLANTS: OLD BRIDGE, N. J. and LONG ISLAND CITY, N. Y.

Being formerly the plants of NEW YORK ARCHITECTURAL TERRA COTTA COMPANY

Products

ARCHITECTURAL TERRA COTTA: Hand made, for both exteriors and interiors.

MACHINE MADE TERRA COTTA ASHLAR, SILLS, COPINGS, MOULDINGS, etc.

TERRA COTTA WALL-TILE.

BAS-RELIEFS and SCULPTURED TERRA COTTAS in polychrome or monotone colors.

Also Vases, Garden Ware and Chimney Pots.

Quality

For forty-nine years the EASTERN TERRA COTTA COMPANY personnel has manufactured terra cotta of the highest quality only. Its product meets the most exacting requirements of architect and owner.

Service

EASTERN TERRA COTTA COMPANY has at its command most complete facilities for the rendering of steady and dependable service to its customers.

Color

Ceramic colors and finishes of proved merit cover such a wide range that the variety of selection presented to architect and owner is almost limitless. EASTERN TERRA COTTA COMPANY presents the results of forty-nine years of constant research in this department. EASTERN TERRA COTTA COMPANY applies these ceramic finishes to terra cotta which has been fabricated to outlast the building of which it will form a part.

Fundamentals

Only the highest grade of selected clays, scientifically mixed and thoroughly pugged, tempered and aged, enter into the construction of Eastern Terra Cotta. With solidly pressed faces, sides and ends, all of honest thickness, and with heavy struts adequately placed, each piece of Eastern Terra Cotta has fabricated into it the guarantee of permanence.

Specifications

Detailed specifications furnished upon request.



Machine Made Terra Cotta

Interior New Prospect Park Zoological Buildings, Brooklyn, N. Y.
AYMAR EMBURY II, Consulting Architect

Erected for Department of Parks, City of New York
HON. ROBERT MOSES, Commissioner

(Indicating treatment of circular columns, as well as wall facings of public spaces and interiors of animal cages)



Hand Made Terra Cotta

Exterior New Bayside High School
WALTER C. MARTIN, Architect

Erected for Board of Education, City of New York, by Royal-Rice Company, Inc., General Contractors

FEDERAL SEABOARD TERRA COTTA CORPORATION

Manufacturers of Architectural Terra Cotta

TELEPHONE
ASHland 4-1220

10 East 40th Street, NEW YORK, N. Y.

FACTORIES: PERTH AMBOY, WOODBRIDGE, and SOUTH AMBOY, N. J

AGENCIES IN ALL PRINCIPAL CITIES

FEDERAL SEABOARD ARCHITECTURAL TERRA COTTA



Federal Seaboard Terra Cotta for interiors and exteriors is in every sense of the word a quality product. Graduate ceramic engineers, trained in correct Terra Cotta technique, are constantly producing new color glaze combinations and textures giving the designer an almost unlimited choice of imperishable ceramic colors.

Terra Cotta of monumental scale is now produced without sacrificing straightness and trueness.

The modeling department is under the direction of artists eminently qualified to create with stylistic correctness decorations ranging from the accepted classic forms to the highest conceptions of modern art.

Federal Seaboard Terra Cotta Corporation owns and operates three large modern factories, each with per-



sonnel technically equipped to efficiently produce the finest Terra Cotta in large quantity.

FEDERAL SEABOARD WALL ASHLAR



Federal Seaboard Terra Cotta Wall Ashlar is manufactured as a veneer or a self-supporting wall, glazed both sides, or scored on the back to receive plaster or for the usual bonding with brick or hollow tile. It is produced by the extrusion process.

The standard unit is 8 in. x 1 ft. 4 1/4 in., with smaller or much larger sizes economically available, complete with bases, mitres, cap mouldings, grilles, etc., so as to produce the architectural effect desired.

A wide range of beautiful high-fired ceramic finishes in multichrome and solid glazes is available, all permanent, impervious, and easily cleaned when desirable.

Federal Seaboard "ENDURO" Wall Ashlar of all sizes is, when specified, automatically and accurately ground to exact dimensions, eliminating unsightly joints, and being square and true makes for the greatest possible economy of labor in erection.

Technical Information and Prices

For definite price, send us architect's elevations, floor plans, and specifications. Approximate estimates can be furnished from sketches.

Technical information on construction, specifications, design and color possibilities is promptly available upon request.

GALLOWAY TERRA COTTA COMPANY

3200 Walnut Street
PHILADELPHIA, PA.

Products

GALLOWAY GARDEN and DECORATIVE POTTERY and TERRA COTTA including: Flower Pots, Boxes, Vases, Bird Baths, Sun Dials, Tables, Benches, Hermes and Statuary. Also Architectural Terra Cotta. Since 1810 our organization has been making Pottery and Terra Cotta of various kinds and is now specializing in Garden and Decorative Wares. Catalogue of Garden Pottery and schedule of Chimney Pots will be sent upon request.

GALLOWAY POTTERY

Finishes

Our high fired strong and durable terra cotta is made unglazed and glazed. The light stony gray is the popular finish in the unglazed although reds, buffs, etc. are also made. Glazes usually range through the blue-green and turquoise, but almost any shade can be made on order.

Special forms can be turned and quotations will be made upon sketches and details.



A Modern Jar
No. 278, 36 ins. high



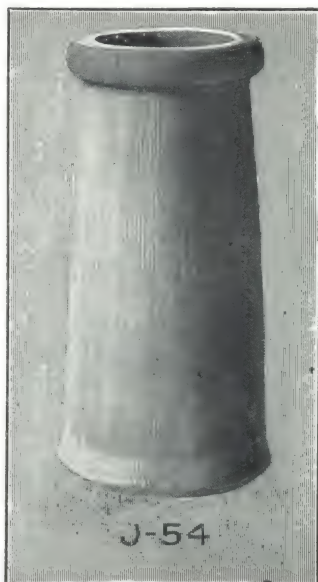
An Antique Replica
No. 275, 45 ins. high

Galloway Handmade Chimney Pots

Made to fit standard flue linings. Special sizes and designs will be executed on order.

Color—Medium red is the stock finish, but gray, buff, and special colors will be made.

Orders—Stock is maintained in standard sizes but orders placed well in advance of your needs will prevent unnecessary and costly delays.



J-54



A-3



A-252



305

COWING PRESSURE RELIEVING JOINT CO.

TELEPHONE
Delaware 2427

226 West Superior Street
CHICAGO, ILL.

COWING PRESSURE RELIEVING JOINT

Purpose

This joint gives positive protection against cracks and spalls in buildings of stone, terra cotta, marble or granite.

Description

Cowing Pressure Relieving Joint is a corrugated sheet lead filler enclosed in a sheet lead envelope the thickness of the bed joint, and used in the place of one mortar joint in approximate alternate stories. Cowing Joint is made to the template of the piers and is placed in the wall some place within the window opening, 3 to 7 ft. below the shelf angle. It carries, at all times, the dead load from the joint to the shelf angle above, which is 3 to 7 lbs. to the sq. in.

Structural Feature

This joint zones a building into story heights and prevents the breaking or spalling of stone, terra cotta, marble or granite facing blocks. It delivers exact and automatic compensation for all destructive stresses thrown on facing material due to shortening of steel caused by temperature changes, compression of steel vibration, wind stress and imposed loads.

It permits the shelf angles to function, which they cannot do in a building where mortar only has been used. It allows the building to find its level and adjust its load without injury to the facing material.

Cowing Joint will carry the normal load of the facing material until super-imposed pressure accumulates. Under such pressure the joint compresses and relieves the stress from the facing material. The load imposed by such stress is kept on the steel as intended and the facing material and mortar are preserved.

Permanency

Once installed in a building, the Cowing Joint remains permanent. It will not squeeze out. Being lead, time and weather have no effect on it. It preserves the mortar joints and practically eliminates future tuck pointing.

Causes of Cracks and Breaks

In tall structures, regardless of the rigidity of the structural steel or reinforced concrete frame, there are movements which occur that will create an over-stressing of the facing material at various points. These movements may be caused by compression of the steel, wind action or unequalized expansion or contraction between the frame and the facing material due to temperature changes.

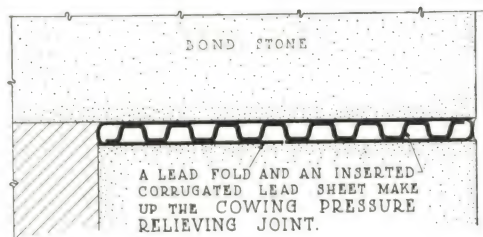
Where these movements occur—if there is not some elasticity in the face of the building—there is sure to be some cracking due to overstress.

The facing under such conditions is obviously called upon to support not only a large measure of its own weight for the total height of the building, but loads of backing masonry, and also some weight of the structure itself, that are transmitted to it by any shortening of the columns or other destructive stresses.

While it is true there is a compensating factor in the fact that extremes of temperature must strike and act upon the facing material first, and must naturally be more intense in the facing material than in the column section protected by its envelope of masonry, it is nevertheless a fact that the difference

in the co-efficient of expansion of steel and stone is such that in a building 260 ft. high a change of 60° temperature in the exterior walls would cause the columns to shorten about ½ in. more than the face of the building.

The action described, which in a structure has the effect of a vise, is the only logical way of accounting for the cracking of perfectly sound facing blocks. Tests of facing blocks, after they had been so cracked, have been found to have a crushing strength equal to the average product of their particular grade, which is always many times more than sufficient to carry any possible load that could come upon them from the evident manner in which they were designed to be used. It is clear, therefore, that the cracking is not due to defective material, but to an overstrain or stress it was not intended to bear.



Compression Test

The following Laboratory Report No. 12176 was made by Robert W. Hunt Co., after testing a sample lead joint:

Dimension under compression, 4x2¼ in.

Area under compression, 11 sq. in.

Original thickness, 0.179 in.

Thickness after test, 0.101 in.

Total permanent set, 0.078 in.

Actual load, lb.	Load, lb. per sq. in.	Total compression, in.
1,100	100	0.025
1,650	150	0.035
2,200	200	0.050
2,750	250	0.068
3,300	300	0.075
6,600	600	0.094

Specifications

Buildings Faced with Stone, Terra Cotta, Marble or Granite—

In all steel skeleton buildings entirely faced with the aforementioned materials,

use one course of Cowing Joint to each story height. Install the joint across the columns and weight-carrying mullions to the full depth of the regular facing block at the sill course level or at some point within the window opening.

Buildings with Ashlar on Lower Floors Only—On tall buildings with 2, 3 or 4 stories of stone, terra cotta, marble or granite, use Cowing Joints the full depth of the regular facing block across the column and weight-carrying mullions at the sill course or some point within the window opening at the second and at the top floor of the ashlar.

For Solid Masonry Walls—Install one course of Cowing Joint 4 in. deep placed on bed, at intervals of 12 or 15 ft. in height, to provide for surface expansion. Explanatory chart sent on request.

Strike Joints as Set—All joints may be struck as set, eliminating the initial tuck pointing. Where the Cowing Joint is installed, bed mortar joints will also be protected against the destructive stresses and their life increased, resulting in a saving of future tuck pointing.

If it is desirable to blend this Joint with the exact color of the mortar, it may be recessed approximately ¼ in. and pointed with a non-staining mastic compound in color and texture to match the surrounding masonry.

Specify—Cowing Joint, 226 West Superior Street, Chicago.

MEMORANDA

**MASONRY
MATERIALS**
- SECTION -

3

CATALOGS 20 to 29

BRICK

THE BELDEN BRICK CO.

Manufacturers of "Belden Brick"

CANTON, OHIO

NEW YORK OFFICE: 15 East 26th Street

DETROIT OFFICE AND WAREHOUSE: 14305 Livernois Avenue

FACTORIES

CANTON, SOMERSET, UHRICHSVILLE and PORT WASHINGTON, OHIO
DISTRIBUTORS IN ALL PRINCIPAL CITIES

"Belden Brick"—

Manufactured in five modern plants from Ohio's best fire clay and shale—large stocks of brick in all colors and textures are available for prompt shipment—orders for oversized brick and special shapes manufactured promptly upon receipt of details.

"Vitritex"—*A non-glare, easily cleaned product for interior purposes.* Made in both standard and double brick size with shapes, in Creams, Grays, Buffs and Iron Spots. Write us for name and location of nearest distributor.

Repeatedly we are called upon to duplicate products formerly made by plants no longer operating, and invite such inquiries.

We manufacture Floor Brick for all purposes.



To prevent substitution with consequent disappointment all "Belden Brick" are branded



Residence, Fort Wayne, Ind.
POHLMAYER AND POHLMAYER, Architects
Belden Santa Barbara Blend



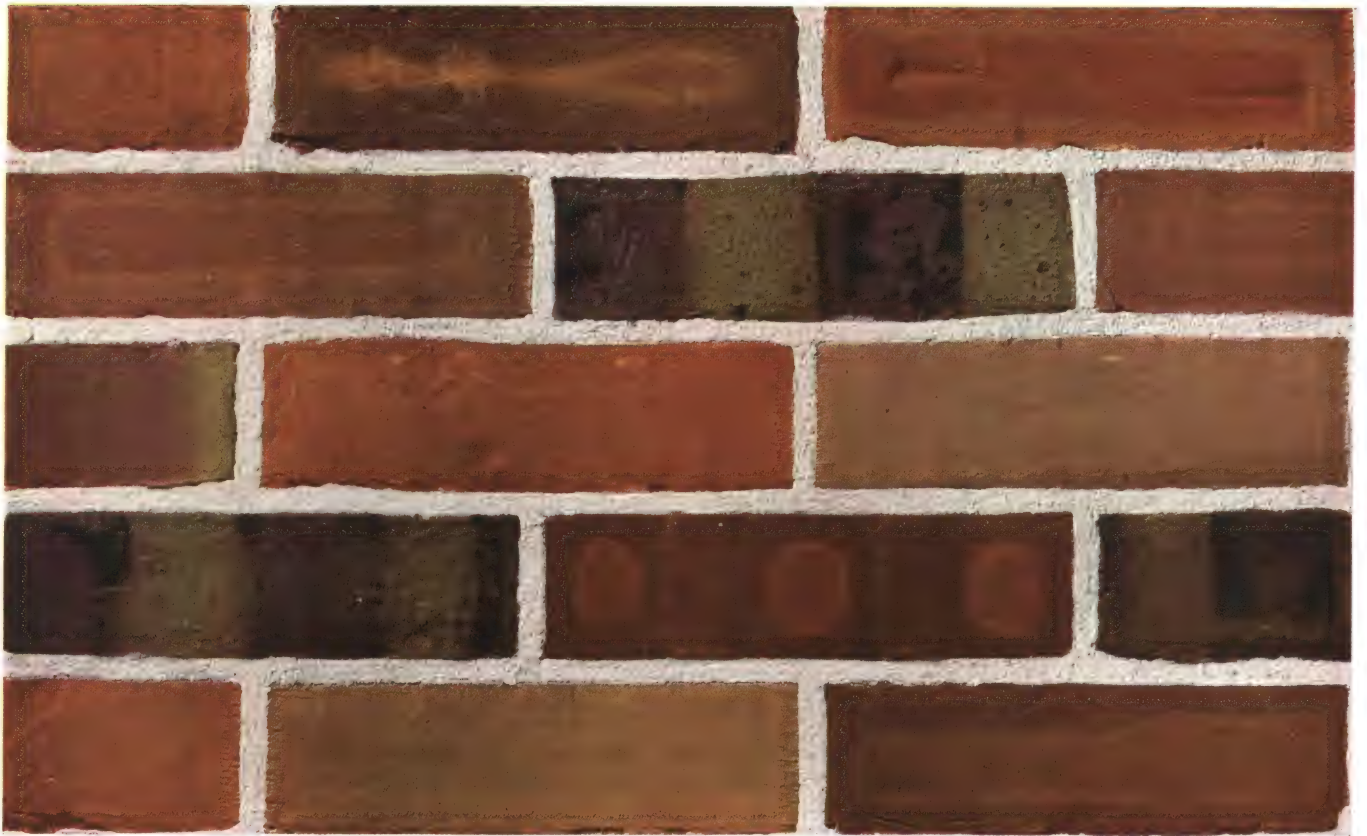
Apartment House, New York, N. Y.
EMORY ROTH, Architect
Belden Limestones



Junior High School, Providence, R. I.
WILLIAM E. HARTWELL, Architect
Belden 290 to 294 Mingled



Pontifical College, Josephinum, Columbus, Ohio
F. A. LUDEWIG CO., St. Louis, Architects
Belden No. 230 Blend



BELDEN YORKSHIRE BLEND

Sand Finished Brick also manufactured in clear reds, pale reds, pinkish buffs and grays.



BELDEN FOLIAGE BLEND

Many other beautiful blends of Shale Brick produced in Smooth, Matt, Vertical, Bark and Rolled Textures.
Catalog sent upon request



BELDEN Shades 280 to 284 F Mingled in "VITRITEX"
A NON-GLARE, DIRT RESISTING, EASILY CLEANED PRODUCT. USED EXTENSIVELY FOR INTERIOR
PURPOSES. Manufactured in Grays, Creams, Buffs and Iron Spots in both standard and double brick size. Standard Special
Shapes carried in stock; individual architectural shapes produced promptly from drawings.



BELDEN Shades 100 to 109 F Mingled, Dark and Medium Range
This unusual, attractive color range with its soft texture is especially adapted for schools, hospitals and the distinguished home.
Catalog sent upon request

CONTINENTAL CLAY PRODUCTS COMPANY

MANUFACTURERS OF

Continental Glazed Brick and Tile
McNees-Kittanning Buff and Gray Face Brick
Unglazed Buff and Gray Facing Tile

MAIN OFFICE AND FACTORY

KITTANNING, PA.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

CONTINENTAL GLAZED BRICK AND TILE

Sizes and Colors

CONTINENTAL GLAZED BRICK and TILE are manufactured in both standard size glazed brick and 5x8-in. or two-brick size glazed tile. They are made in all colors and finishes which can be produced in high fired ceramic tile of this type.

Quality

The same high grade plastic fire clay is used in the manufacture of the body of CONTINENTAL GLAZED BRICK and TILE as we have used in our regular buff and gray face brick for many years. Our method of manufacture insures perfect bond between the body of our tile and the glaze. Because we manufacture by the one-burn process, both the body of the ware and

the glaze are subject to a very high temperature in the burning. Both the body and the glaze will withstand oils and acids and are not affected by the methylene blue or liquid ink test.

Quantity

We have furnished glazed brick and tile for many outstanding buildings in different parts of the country. Our plant is always in operation.

Shapes

We are equipped to manufacture all standard fittings and shapes and can also make on order any specials that may be required. Write for details of shapes or any other information desired.

McNEES-KITTANNING BUFF AND GRAY FACE BRICK

Quality

McNEES-KITTANNING BUFF and GRAY FACE BRICK have been the standard of quality for thirty years. They are made from the highest grade plastic fire clay. We have a large acreage of this clay which has a very uniform quality—there has not been any noticeable variation during our thirty years of manufacturing experience. This assures uniform size and color and enables us to duplicate at any time any shade of brick we have ever made.

We have supplied brick for outstanding buildings all over the country. We believe we enjoy a wider shipping range than the manufacturers of any other brick, as this particular type of light brick is manufactured only at Kittanning.

Permanent Colors

McNEES-KITTANNING BUFF and GRAY FACE BRICK are burned at high temperature entirely by natural gas to the lightest clear shades of buff and gray. This makes their color permanent and accounts for their not soiling after being in the walls and exposed to the weather for many years.

Near White Gray—We believe our gray brick are the lightest in color, or nearest white of any brick manufactured.

Buff—Our buff brick are made in several different tones of light clear buff and graded to uniform shades. This enables us to supply large orders of an absolutely uniform shade or, if a mingle is desired, we can mix the different shades, the color tones blending perfectly.

UNGLAZED BUFF AND GRAY FACING TILE

These are made in uniform shades of light buff and gray in the same sized units as our glazed tile and require the same line of shapes or fittings. They are load-bearing and can be used as part of the wall instead of just a lining. As they can be laid more quickly per square foot and are lighter in weight, the cost in the

wall is considerably less than for standard size brick.

The type of coring used in both our glazed and unglazed tile enables the mason to make cuts on the job more readily than with other tile. This eliminates the shipping of different sized pieces and the trouble of keeping them separate on the job.

HYDRAULIC-PRESS BRICK COMPANY

Manufacturers and Distributors of Hy-tex Brick
ST. LOUIS, MO.

BRANCH OFFICES, EXHIBIT ROOMS AND DISTRIBUTING CENTERS

CHICAGO, ILL., Builders' Building
DAVENPORT, IOWA, Putnam Building
DUBOIS, PA., Deposit National Bank Building
INDIANAPOLIS, IND., Board of Trade Building
KANSAS CITY, MO., 56th and Lister Streets

OMAHA, NEB., 41st and Lake Streets
PEORIA, ILL., Lehmann Building
PHILADELPHIA, PA., Otis Building
ROSEVILLE, OHIO
SOUTH PARK, OHIO

WASHINGTON, D. C., Colorado Building

REPRESENTATIVES

NEW YORK, N. Y., Fredenburg & Lounsbury, Architects Building, 101 Park Avenue

AUTHORIZED DISTRIBUTORS IN PRINCIPAL CITIES

Hy-tex Products

A complete line of FACE BRICK, including Enamel, Equitable, Vitri-cote, Vitri-glaze, and Salt Glaze, suitable for every kind of structure, both for exteriors and interiors. COMMON BRICK; PAVING BRICK; HOLLOW BUILDING TILE.

SWIMMING POOL LININGS.

Company and Service

The HYDRAULIC-PRESS BRICK COMPANY has been specializing in the manufacture of Face Brick for over a half century. The especially high quality of its products and the fairness of its sales policy have won for the Company a wide public confidence.

With modern plants, situated in the best clay and shale fields of the country, and in close proximity to the principal markets, its facilities are adequate to handle operations of any kind.

Process

In the production of Hy-tex Brick, both the "Dry-Press" and "Stiff-Mud" processes of manufacture are used.

Hy-tex Dry-Pressed are made under a forty-ton hydraulic pressure on machines of the Company's own invention, and, after firing, have an absorption low enough to prevent penetration, yet sufficient to guarantee a perfect bond between brick and mortar joint.

Hy-tex Stiff-Mud Brick are semi-vitreous, and practically impervious to moisture.

Face Brick

Hy-tex Face Brick are produced in a great variety of soft natural color tones, ranging through Reds, Buffs, Tans and Grays. They are obtainable in uniform shades or in

Hy-tex



Cities Service Building
CLINTON & RUSSELL, HOLTON & GEORGE,
Architects
Faced with Hy-tex Dry Press Grays

A Few Recent Projects

BUILDING
New York Hospital-Cornell College Association, New York, N. Y.
Hy-tex Equitables No. 110-120-130 Range
Chrysler Building, New York, N. Y.
Hy-tex Equitables No. 128—trim Black Enamels
New Bryant Building, Kansas City, Mo.
Hy-tex Gray Speckled Vitri-cotes with Special Black Spandrels

combinations of various color ranges, in smooth, semi-smooth and sand-struck finishes, or in a number of distinctive rough textures, running from extremely rough to moderately rough.

Enamel and Glaze Brick

Hy-tex Enamel Brick—A hard, durable, opaque enamel, with a very brilliant, highly reflective finish.

Colors—White, Ivory, Cream, Green, Brown, Jade, Blue, Black, Yellow, Red and Transparent Speckled Buff.

Hy-tex Equitable Brick—A dull china glaze devoid of gloss.

Colors—White and Gray Speckled.

Hy-tex Vitri-cote Brick—A dull glaze similar to the Equitable.

Colors—White, Limestone, Gray Speckled, Black and Green.

Hy-tex Vitri-glaze Brick—A bright, satin-like glaze, without excessive gloss.

Colors—White, Cream, Cream Mottled, Green, Blue, Black, Yellow and Red.

Hy-tex Salt Glaze Brick—A transparent salt glaze burned into the exposed surfaces.

Colors—Light Buff to Golden Brown.

Swimming Pools

The fitness of Hy-tex Enamel Brick for pool linings is at once obvious. Their beautiful and durable surface, which will not peel or discolor, admits of perfect cleansing with a minimum of labor.

Literature

Booklets on Hy-tex Enamel and Polychromatic Decoration; Hy-tex Equitables; Hy-tex Salt Glaze Brick; Hy-tex Swimming Pools; Bonds and Mortars in the Wall of Brick; Brick Scales and Tables, and other material. Apply to nearest branch office.

ARCHITECT
Coolidge, Shepley, Bulfinch & Abbott
William Van Alen
Graham, Anderson, Probst & White

HANLEY COMPANY

Manufacturers of Glazed and Unglazed Face Brick
BRADFORD, PA.

NEW YORK OFFICE, 101 Park Avenue

BOSTON OFFICE, 119 Allerton Road

PLANTS: BRADFORD, PA., SUMMERVILLE, PA.

SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

UNGLAZED PRODUCTS OF HANLEY COMPANY

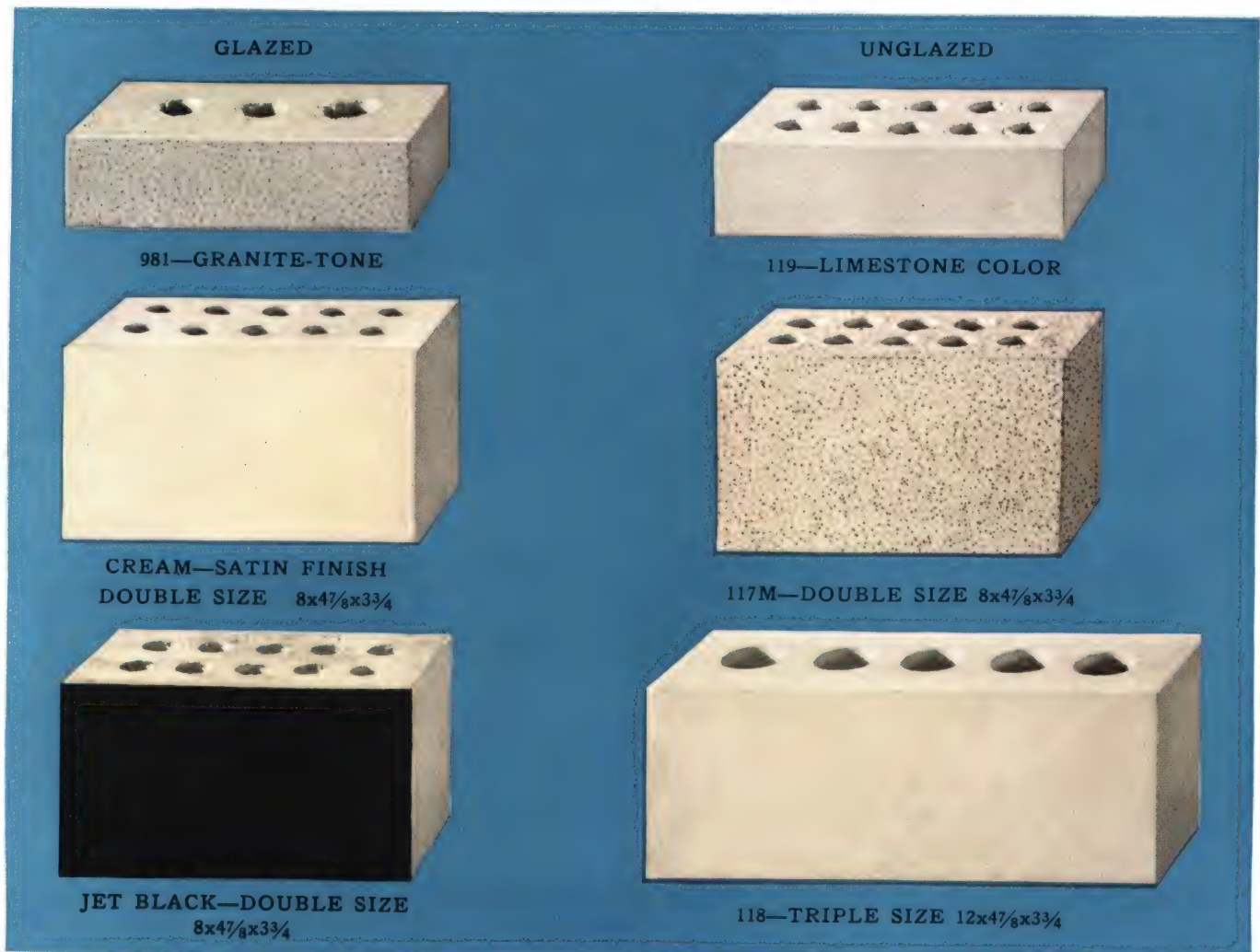
A complete line of face brick colors and textures—Tan, Buff, Brown, Light Grey, Pearl Grey, and Bradford Reds.

Face Brick to Blend with Limestone

The Hanley Company specializes in shades of grey brick to blend with various types of stone and granite for small as well as monumental buildings. The new Shade 119 illustrated below is the result of years of effort to bring out at a reasonable price what is believed to be the finest "stone shade" of face brick ever made. When used with Indiana Stone it should be laid with $\frac{1}{4}$ " joints and a grey mortar to carry out the color effect of the wall.

With this unprecedented color of brick available, unusual structural combinations of stone and brick design become possible due to the fact that "layer effects" caused by sharp color lines between brick and stone are avoided.

The Limestone Shade No. 119 is made in three sizes commonly known as face brick size ($8 \times 2\frac{1}{4} \times 3\frac{3}{4}$), double brick size ($8 \times 4\frac{7}{8} \times 3\frac{3}{4}$) and triple size ($12 \times 4\frac{7}{8} \times 3\frac{3}{4}$). Working with these larger units in the grey color give to the designer the possibility of a low cost



HANLEY COMPANY

wall of fine grey color with elimination of almost half the lineal mortar joints customary in single sized brick construction. In this manner a "grey block" effect in the wall can be created using face brick.

Light Colored Face Brick for Residences

As relief from the monotony of red common brick

Hanley shades of brown, tan, salmon and grey are frequently used for residence work. These shades are made in flat colors or mingles and are available throughout the Eastern United States at such reasonable prices that the difference in cost between a small house built of local common brick and lighter colored face brick runs about one hundred dollars.

GLAZED BRICK:

Hanley Glazed Brick are made in single size ($8 \times 2\frac{1}{4} \times 3\frac{7}{8}$) and double size ($8 \times 4\frac{7}{8} \times 3\frac{7}{8}$) in a satin and lustrous finish. Standard colors are white, cream, white with black specks, grey, tan, dark blue, light blue, dark green, light green, black and mottled finishes.

In order to insure the highest quality weather proof glazes we recommend the insertion of the Glazed Brick & Tile Institute test in all specifications as follows:

Crazing: A definitely controlled and recorded steam autoclave test shall be made as follows: Three units carefully marked for identification shall be tested. They shall be thoroughly dry and then placed in an autoclave and the steam pressure started and slowly brought up to between 25 and 30 pounds pressure in thirty minutes, the pressure then increased gradually to between 65 and 75 pounds in the next fifteen minutes. Then increased gradually to 150 pounds in not less than 15 minutes. The pressure shall then be held at 150 pounds, plus or minus 5 pounds, for a period of one hour. The pressure shall then be released by a gradual opening of the autoclave to allow a gradual cooling over a period of not less than one hour, to room or hand-handling temperature. The brick shall then be removed and examined. Development of crazing, spalling, peeling or cracking shall be cause for rejection.

Shapes Now Standardized

The use of glazed brick has been greatly simplified and cheapened by the issuance by the Glazed Brick & Tile Institute of standardized shapes which the Hanley Company uses. All radii, lengths, heights, and nomenclature are uniform in the industry and shapes specified can be obtained from any manufacturers. Hanley Glazed Brick Shape catalogue will be sent upon request.

Detailing

All interior glazed brick installations should be detailed by the architect in accordance with standard brick and double brick sizes to obtain the most attractive wall at lowest cost, and to avoid confusion at the job.

Advantages of Glazed Double Brick Interior

These units are merely twice as high plus a joint as a standard brick ($8 \times 4\frac{7}{8} \times 3\frac{7}{8}$), weigh under 9 pounds and can be laid by the bricklayer with one hand. Sizes vary much less than on larger units; warpage is far less than with larger units; closures and trim shapes are simple to install and are made absolutely true.

The cost of laying double brick units is 30% less per square foot than single brick units.

Glazed Double Brick have a vitreous surface, resist pencil marks, ink, grease and other dirt accumulations.

Shipping and Manufacturing Facilities

The Hanley Company is the largest manufacturer of fine ceramic products in the country. The two plants are located to give rapid service to the Eastern markets and have good rail connections for the Western markets.

The quality of such Hanley products as Floor and Wall Tile, Quarry Tile, Flame-Tinted Tile, Floor Brick, Acid Brick, Roofing Tile, Bradford Red Face Brick, Limestone Color Face Brick and Glazed Brick, is obtained by virtue of the exact control of heat and machinery which these two plants are famous for. The fact that the Hanley Co. is believed to be the largest manufacturer of face and glazed brick is the result of the fine ware produced in these plants.

Cost Estimates

Comparative wall costs, for both interior and exterior work, of the many new types of material will be sent upon request. Generally speaking the double brick units give low wall costs if used in straight large unbroken surfaces where a minimum of shapes are required. Glazed and unglazed units are made in thicknesses of 2", 3", 4", 6", and 8" in various colors.

With large sizes now available in unglazed finishes a very reasonable wall construction may be obtained by using glazed material for the lower half of the wall surface and an unglazed unit of the same size and a blending color for the top half of the wall.

In general this type of construction is only slightly higher in cost than using plaster for the upper part of the wall and is load bearing, sanitary, durable, construction.

ESTABLISHED 1847

LOCHER & CO., INC.

MANUFACTURERS

Distinctive Handmade and Machine-made Bricks

MAIN OFFICE AND WORKS

GLASGOW, VA.

OFFICE AND DISPLAY ROOMS

3714 W. Broad Street, RICHMOND, VA.

REPRESENTATIVES IN LEADING CITIES

Kenmore Types (Red Base, Handmade)

The same sizes, colors and finishes as the old bricks found in such historic landmarks as Kenmore and Brompton, at Fredericksburg, Gadsby's Tavern at Alexandria, Westover in Charles City County, and others of note.

Tidewater Colonial Type (Woodburned, Handmade)

Produced only in the size used in the restoration of old Colonial buildings in Williamsburg, Virginia. The well serrated faces, beautiful soft toned colors and antique appearance of these bricks put them in a class entirely by themselves.

Chateau Types (White Base, Handmade)

The unusual creases and folds showing in the faces of these bricks are only found in genuine hand moulded units. They lend distinction, charm and beauty to finished walls. Available in two ranges, The White Swan, a straight shade—and our Polychrome Range, a harmonious blend of whites, pinks, and straw browns.

Old English Types (Machine-made)

With this sand mould brick we purposely avoid mechanical perfection and produce a unit that will blend with conservative Colonial designs where character and distinction with low cost is desired. Available in both standard and oversize with special shapes.

Special Wares (Handmade)

The Williamsburg type "glassy" headers. Rubbed brick trim. Moulded entrance doorways. Wall copings. Pilaster caps and bases. Water tables. Belt courses. Round and square brick columns. Dentil and modillion cornices. Flat, circular and segmental arches. Step treads. Paving units. Shapes to detail.

Old or Reclaimed Bricks (Handmade)

We maintain a competent wrecking and salvaging organization in Richmond, and are constantly in position to furnish such reclaimed materials as Handmade Bricks, Wide Pine Flooring, Mantels, Trim and other items.

Services

Our personnel includes men who have had practical experience in both the architectural and construction fields.

We offer a consultation service to architects on the possible use of shape and trim treatment, specific cost data, etc.

Our representatives in various cities will be glad to show you display panels of our products.



Main Entrance Doorway Main Building Woodrow Wilson High School, Washington, D. C.
NATHAN C. WYETH, Municipal Architect

SAYRE & FISHER BRICK COMPANY

ESTABLISHED 1851

Manufacturers of Burnt Clay Products

SAYREVILLE, N. J.

BRANCH SALES OFFICE: New York, N. Y., 101 Park Avenue—Telephone, LExington 2-5997
Address Communications to Main Office, Sayreville, N. J.; Telephone, South River 490

The SAYRE & FISHER BRICK COMPANY is among the oldest manufacturers of clay products in the country, having a continuous production record for a period of 85 years. Through experience and large plant capacity it feels well equipped to furnish proven, durable building material which answers the need of today's building requirements.

It has supplied material for many outstanding buildings throughout the United States, inspection of which should prove interesting. It cordially invites all architects to share their building problems and places at their disposal an organization of ability and experience.

It would appreciate an opportunity to be of service to you.



Museum, University of Pennsylvania



High School, Haddonfield, N. J.



Colonial Residence, South Orange, N. J.

COLONIAL RED BRICK

Sand finished red clay building brick are produced in four distinctive types and each is selected into four distinctive grades. Variations, combinations and blends make the company's products adaptable to the taste of the most fastidious architect or owner.

Selection—Large capacity and advantageous burning conditions make possible the selection of brick ranges to suit the architectural treatment of individual jobs. No matter how difficult the selection required, the cost of all brick is strongly influenced by the economies inherent to large production.

Sizes—The attention of architects is called to the various sizes of the products offered. Bond, course height, and wall thickness, will naturally affect the choice of a practical unit. Ranges in heights from $2\frac{1}{8}$ to $2\frac{5}{8}$ in., in width from $3\frac{3}{8}$ to $3\frac{3}{4}$ in., in length $7\frac{3}{4}$ to $8\frac{1}{4}$ in., give a choice adaptable to most requirements.

Up Draft—Manufactured side cut or repressed end cut. These brick show characteristic dark kiln marks, varicolored water marks, occasional natural iron spots on a background color varying from purple red to light brownish red. All selections from close to wide ranges including clinkers.

Down Draft—Manufactured side cut or repressed end cut. These brick in a range of colors from deep purple-red to light "terra-cotta" brownish red, have clear faces without kiln markings or developed iron. Headers in most ranges are adaptable to pattern work due to a slightly darker color than the face.

Special Shapes—Several stock designs for water tables, band courses, jambs, etc., also special brick moulded or ground to the architects' specifications and drawings. Specialists of long experience will assist the architect and builder in matters of detail.

BUILDING BLOCK

Hard burned building block with amazing load carrying capacity are being recognized for their utility and economy. They are cored vertically and are classified as a solid masonry unit (25% void or less). They are designed for use independently or in conjunction with brick ($5\frac{1}{2}$ in. course height = 2 courses of brickwork @ $2\frac{3}{4}$ in.) in walls, piers, etc. As a mass masonry unit they are unexcelled due to rapid erection and high strength. They are *hard burned* for use exposed to weather or sub-soil conditions and at the same time are suitable for plastering without furring. On many buildings an extremely low cost interior has been se-

cured by painting a clay block wall. Masons find the units convenient to handle. Their use follows standard bricklaying practice. No units are too heavy to be laid with one hand.

TYPES, SIZES AND USES

Type	Size, inches	Wall uses
A	12x5 x5 $\frac{3}{4}$	12-in. wall 6-in. curtain
B	8x5 x8 8x5 x3 $\frac{3}{4}$	8 or 12-in. wall 4-in. curtain
C	10x5 x4 $\frac{3}{4}$ 10x2 $\frac{1}{4}$ x4 $\frac{3}{4}$	10 or 16-in. wall 4 $\frac{3}{4}$ -in. curtain

Special corner block to suit soldier, rowlock courses or corbels.

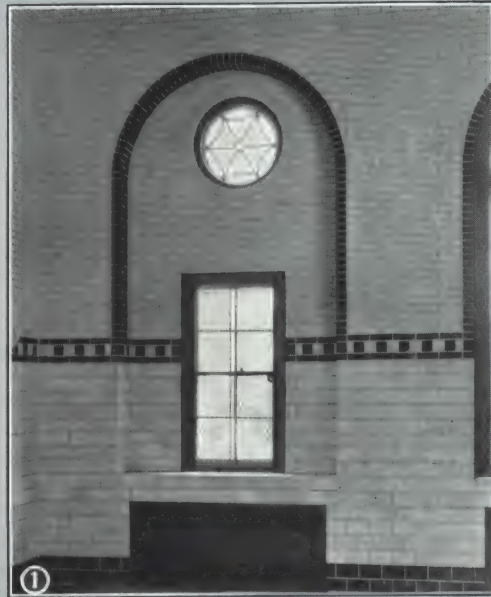
Moulded Red Brick—Front Brick—Enameled Brick—Fire Brick—Ground Refractory—Refractory Cement



1911

1936

TWENTY FIVE YEARS OF PROGRESS



STARK GLAZED PRODUCTS

THE STARK BRICK CO.
CANTON, OHIO.



THE STARK BRICK COMPANY

CANTON, OHIO

NEW YORK OFFICE: Belden-Stark Brick Corp., 15 E. 26th Street
DETROIT OFFICE: Belden-Stark Brick Co., 14305 Livernois Avenue

REPRESENTATIVES IN PRINCIPAL CITIES

THE STARK BRICK COMPANY is one of the pioneers in Glazed Products in this country.

With a personnel having experience since 1911, they are today the largest producers in the glazed field.

The first of the revolutionary de-airing machines was installed in a Stark plant, which today has four complete de-airing production units.

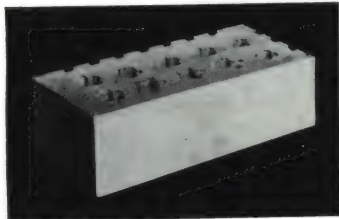
All Stark products except Harvard Brick are now produced by the de-airing process, which removes the air from the clay during the forming process, resulting in greater strength, freedom from blisters, and other like defects.

With three large plants embodying the latest equipment capable of producing and promptly servicing any sized order, Stark now offers the following products:

Brick	2 1/4 x 8 in. face size, 1 1/4 and 3 3/8 in. thickness
"Artile"	3 3/4 x 8 in. face size, 1 1/4 and 3 3/4 in. thickness
"Brictile"	4 3/4 x 8 in. face size, 1 1/4, 3 3/4, 5 3/4 and 8 in. thickness
Face Tile	4 3/4 x 8 in. face size, 1 1/4, 3 3/4, 5 3/4 and 8 in. thickness
Face Tile	5 x 12 in. face size, 1 1/4, 3 3/4, 5 3/4 and 8 in. thickness
Floor Brick	3 3/4 x 8 in. face size, 1 1/4 and 2 1/4 in. thickness
Harvards	2 1/8 x 8 in. face size, 3 3/4 in. thickness

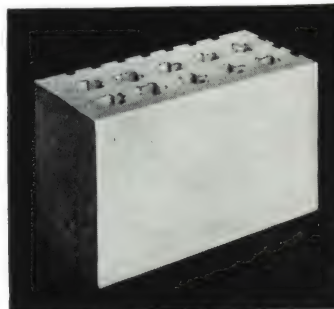
Together with an adequate and complete line of shapes for any ordinary construction requirement.

Brick



For over a score of years, Stark has been an unquestioned leader among fine brick. Some of the major reasons why they have gained such wide popularity are the lasting beauty, sanitation and resistance of the hard glazed surface to acid, grease, and moisture. The only attention necessary is an occasional washing.

"Brictile"



"Brictile"—Presents the same general advantages in load bearing qualities and finishes as Stark Brick, the difference lies in the economy and appearance. Each "Brictile" lays up the equivalent of two standard brick and a mortar joint, resulting in large savings in mortar and labor. "Brictile" is admirably suited for buildings of any type where sanitation or economy of maintenance are main considerations.

"Brictile" Soap

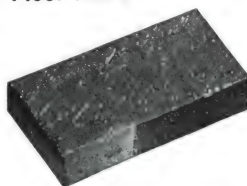


"Brictile" Soap—1 1/4 in. thickness, for furring or veneering purposes. Identical in quality and appearance with "Brictile."

Sanitary Floor Brick

Sanitary Floor Brick is a highly vitrified de-aired fire clay product, burned to a blue carbon manganese body, giving extreme strength, abrasive resistance and is non-absorbent.

The surface is wire-cut to give anti-skid surface. The hard as steel, blue carbon manganese specially treated body and glazed surface will resist severe traffic and stand up where exposed to sulphuric, hydrochloric, nitric and lactic acids, also salt brine, blood, grease, and oil, which cause practically all other floors to deteriorate or break up.

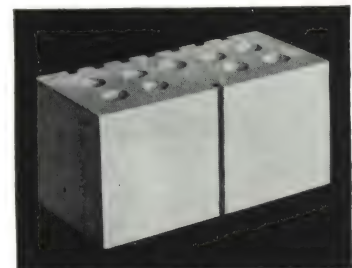


Harvards

Hand mould water struck Colonial Brick in traditional blends of reds, pinks, and salmons, characteristic of New England products. Harvard size units made with the same close inspection and attention to reproduction of detail found in all Stark products. All required shapes for exterior work are available.



"Artile"

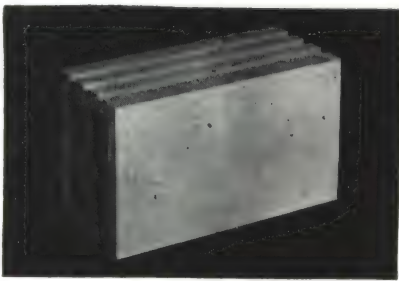


"Artile"—A patented unit developed to provide the building industry with a flat wall tile facing, combined with a load bearing unit,

which will be permanent and not crack, chip or loosen. The size of "Artile" is 3 3/4 x 3 3/4 x 8 in., the face of which is divided into two equal sections by a 1/4 in. vertical dove-tail false mortar joint.

As the wall is laid, these false joints are "pointed up," producing square wall tile. This construction cannot be distinguished from expensive, flat wall tile veneered upon a load bearing wall.

See following pages for additional information as to Finishes, Colors, Shades, Grading, Uses, Shapes, Laying Details, and other pertinent facts



4 7/8 x 8-in. Face Series

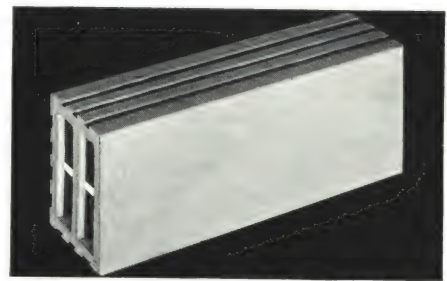
Face Tile (Unglazed Only)

Stark Face Tile are structurally sound and are selected for face appearance. They are recommended where low cost is an important factor.

These tile are made of high grade, light burning fire clay and are manufactured by the famous de-airing process.

Therefore, these tile are free from blisters, ragged corners and edges and are straight and true.

The crushing strength of Face Tile is in excess of 3,000 lbs. per sq. in. The absorption less than 6%.



5x12-in. Face Series

FINISHES, COLORS AND SHADES**GLAZED WARE (Wall Types)**

Stark Glazed Products are produced in three types and give beautiful, lasting, and sanitary finishes impervious to moisture, oil or greases.

Ceramic Colorglaze—The highest type of vitreous ceramic ware. Produced in gloss and mat finishes, in smooth and mottled textures.

Specification—Ceramic Colorglaze Brick, "Brictile" or "Artile" shall include all units having an applied vitreous coated face, the coating either partially or wholly different from the body and applied previous to final burning.

Light Shades

Shade 520—White.
Shade 540—Ivory.
Shade 550—Yellow.
Shade 560—Gray.
Shade 585—Tan.
Shade 620—White and Black mottled.
Shade 680—White and Tan mottled.
Shade 681—White mottled.
Shade 682—Buff and Tan mottled.

Trim Shades

Shade 570—Azure Blue.
Shade 571—Aster Blue.
Shade 572—Yale Blue.
Shade 580—Granada Brown.
Shade 581—Maroon.
Shade 586—Titian Gold.
Shade 590—Black.
Shade 596—Antique Green.
Shade 598—Hunter Green.

Available in Brick, "Brictile," and "Artile."

Coated Salt-Glaze—The famous Stark No. 900, having an opaque ceramic coating, with a glossy finish. Free from carbon specks and extreme tone variation.

Specification—Coated Salt-Glazed Brick or "Brictile" shall include all units which have an applied ceramic coating—not inherently a glaze—which burns to a flat unglazed finish, but which are salt glazed during firing to produce a glossy finish.

Light Color Group
Shade 900—Opaque Cream.

Trim Color Group
Shade 940—Gloss Brown.
Shade 950—Gloss Black.

Available in Brick and "Brictile" only.

Stark Salt-Glaze—A glossy Stark salt glaze upon a high grade fire clay body. The heavy glaze becomes an integral part of the body, having the same expansion and contraction and will not crack or check.

Specification—True or natural Salt-Glazed Brick or "Brictile" shall include all units which are vapor salt glazed directly upon the clay body, the natural burning color of this body determining the color of the finished product.

Available in Brick and "Brictile" only.

Super Quality—Shade Ranges—Having a limited color variation in each range of shades, designated as follows:

GLAZED BRICK, "BRITILE," AND "ARTILE"

Super Quality (A Grade)—Units of the highest structural and mechanical perfection consistent with manufacturing process employed.

The variation in dimensions from standard dimensions shall not exceed the maximum shown below:

	Brick	"Brictile"
Variation in length.....	1/8 in.	1/8 in.
Variation in height.....	1/8 in.	3/8 in.
Variation in depth.....	1/8 in.	1/8 in.

Maximum tolerance for distortion of the plane and/or the edge of the face shall be 3/16 in. and only a reasonable percentage shall approach the maximum.

Court Quality (B Grade)—Units having slight mechanical and/or glaze defects, including small handling chips, apparent in finished wall only when closely inspected and/or beyond the maximum tolerances for "A Grade."

Commercial Quality (C Grade)—Units having larger de-

Shade 50—Cream.

Shade 60—Light Buff.

Shade 55—Medium Cream.

Shade 75—Medium Buff.

Mingled Shades—Having a harmonious mixture of various colors, designated as follows:

Gratones—A blend of gray colors.

Creamtones—A blend of cream colors.

Buftones—A blend of buff colors.

Court Quality—Mingled Shades—(See definitions of grading.) Offered when available in Gray Mingled and Light Mingled Shades.

Commercial Quality—Mingled Shades—(See definitions of grading.) Offered when available in Gray Mingled and Light Mingled Shades.

Available in Brick and "Brictile" only.

GLAZED WARE (Floor Types)

Salt, carbon and manganese glazes burned into a high grade fire clay body. The resultant blue vitrified body is non-absorbent, non-abrasive, and acid resistant. Produced in full glazed and semi-glazed types.

Dairy Types—Glazed units selected for a rich blend of maroon shades.

Packing House Type—Blue bodied semi-glazed units having a maximum of non-skid qualities, without color selection.

Available in Standard and Heavy Duty Floor Brick.

UNGLAZED WARE (Wall Types)

The highest type of unglazed structural units produced from the same materials and with the same workmanship and close attention to details characteristic of Stark Glazed Products.

Select Qualities—A blend of Buff Shades.

Standard Qualities—(See definitions of grading.) A blend of Buff and Gray Shades.

Available in Brick, "Brictile" and Face Tile.

HARVARDS

Hand mould water struck Colonial Brick, reproducing the Early American with complete fidelity to color, texture, and finish. All required shapes for exterior work are available.

Dark Range—Blends of dark and medium reds in shades characteristic of New England products.

Light Range—Blends of light reds, pinks, and salmons.

Full Range—Harmonious mingle of all shades.

DEFINITIONS OF GRADING

fects, including handling chips, glaze defects, factory and kiln marks. This quality is the least expensive.

UNGLAZED BRICK, "BRITILE," FACE TILE

Select Quality (A Grade)—As true and mechanically perfect as careful manufacture can produce.

Standard Quality (B Grade)—Wider shade variation with some mechanical defects, including small handling chips and slight flashing, but meeting all requirements of load bearing structural units.

Commons or Backup Quality (C Grade)—Load bearing units either imperfect mechanically or flashed, dusted, stained, or chipped.

FLOOR BRICK—STANDARD AND HEAVY DUTY

A Grade—As true and mechanically perfect as careful manufacture can produce.

B Grade—Slight mechanical imperfections, overglaze, handling and glazing defects, not selected for color.

GENERAL USES AND ADVANTAGES

All Stark glazes and products present the same general advantages. A choice depends upon varying possibilities in surface treatments. Among the major advantages of Stark products are the following:

- (1) High degree of sanitation.
- (2) Walls impervious to moisture.
- (3) The surfaces naturally resist fire and acid and are easily cleaned when desired.
- (4) Great facility in architectural designs, with wide selection of colors and sizes.
- (5) High in light reflecting or diffusing qualities.
- (6) Permanent beauty and color.

Where Used—Interiors—Depending on the specific requirements of the project, any Stark product can and may be specified in all buildings where a loadbearing or veneering unit with a sanitary, permanent, facing is desired. Stark Glazed products are particularly desirable for interior walls where light reflection or diffusion are vitally important, together with sanitation, permanency, and low eventual cost of upkeep.

Exteriors—Stark Ceramic Colorglaze materials are used for monumental type buildings, store fronts, garages, and service stations. The Unglazed unit is a perfect material for lower cost usages where superior mechanical character is desired, together with enduring life and appearance.

Uses—For original construction and modernization or rehabilitation of existing structures, both for interior and exterior, Stark products are currently being used in the following types of construction:

Apartments	Bakeries	Daires
Armories	Bar Rooms	Distilleries
Airports	Cell Blocks	Engraving Plants
Abattoirs	Canneries	Field Houses
Brew Rooms	Churches	Factories
Bottling Rooms	Cafeterias	Funeral Homes
Boiler Rooms	Class Rooms	Fire Stations
Battery Rooms	Corridors	Gymnasiums

Hotels
Kitchens
Locker Rooms
Light Courts
Loading Platforms
Laundries
Milk Houses
Operating Rooms
Orphanages
Offices

Power Houses
Post Offices
Public Buildings
Packing Houses
Prisons
Printing Plants
R. R. Terminals
Residences
Restaurants
Recreation Rooms
Stair Wells

Showers
Store Rooms
Service Stations
Schools
Telephone Exchanges
Toilets
Wash Rooms
Warehouses
X-Ray Rooms
Zoological Buildings

CLEANING

After Construction—Use diluted sulphuric acid solution and rinse.

After Use—Use any good cleaning powder with warm water.

CRUSHING STRENGTH

Crushing strength exceeds Municipal, State or Federal Building requirements.

SERVICE

Stark's three Plants consists of 57 kilns, with a daily capacity of over 300,000 units.

We carry an immense yard stock of between ten and twelve million units. Orders of ordinary size can usually be filled from yard stock, reducing the time of delivery to a minimum.

PACKING AND SHIPPING

Super Quality in Natural Salt-Glaze, Coated Salt-Glaze, and Ceramic Colorglaze will be packed in patented containers.

Court and Commercial Qualities of the above and unglazed material will be carefully loaded in straw, properly boarded and braced.

Units regularly shipped in straw will be packed in containers at an extra cost.

SAMPLES

Samples will be sent to architects, engineers, contractors and owners on request, without charge.

CONSTRUCTIONAL DETAILS

The most important factor in laying a floor with our Sanitary Floor Brick is to tamp the brick well and to continue the work and finish the grouting before leaving the job to set. If the brick are tamped down for a certain area, they should not be allowed to stand overnight, but filled in with grouting before leaving the work.

The bed of concrete varies from 1 in. to 3 in., depending on the pitch required. For a bed 1 in. thick, use one part of cement to two parts of torpedo sand. For a bed 2 in. thick, use one part of cement to two and one-half parts sand. For a 3 in. bed, one part of cement to three parts sand.

This mixture should be quite dry and have just enough water to make it workable. As the brick are tamped down, the water will come to the surface and help to cement the brick firmly to the bed. No part of this cement is allowed to form any

part of the joints and brick are laid as closely as possible.

The grouting is then applied, which is composed of very fine, or reground Portland Cement and water. The joints are filled thoroughly before the job is allowed to stand and usually the surface must be worked over several times with a squeegee before the joints are filled. Additional water may be added to the grouting as required.

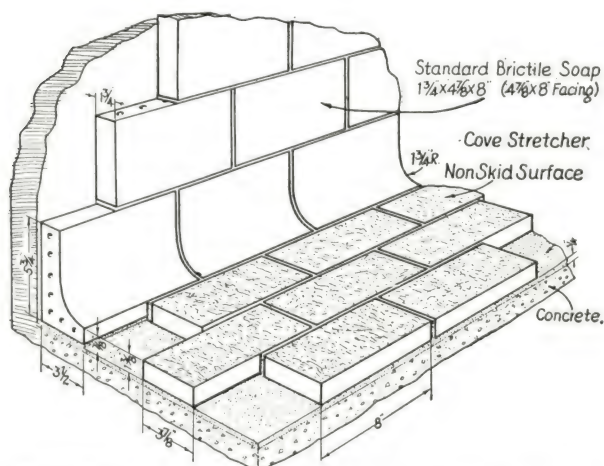
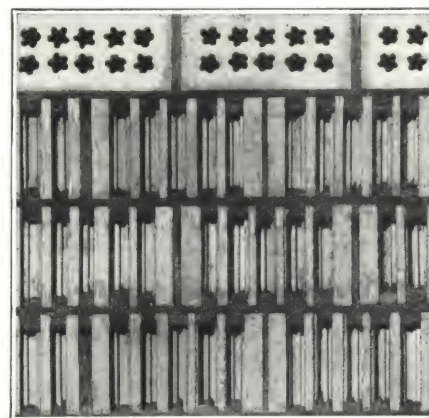
SHAPES

Any "Brictile" Shape will be furnished burned to match floor brick.

BONDING STRENGTH OF STARK PRODUCTS

The illustration shows a section of a Stark "Brictile" wall cut back to the first row of holes. The bonding strength of the wall is reinforced by a second row of vertical holes behind these.

When the mortar is spread, a portion of it first works downward into the holes below, the extent of which is seen in this illustration. As the next row of "Brictile" is placed, a portion of the mortar is forced upward into the holes above. The location of the holes permits the use of reinforcing rods, if desired, for free standing walls. After mortar sets, this wall is one solid unit. (Brick, "Brictile," and "Artile" have the same bonding advantages.)



Detail Showing Usual Method of Laying Sanitary Floor Brick

STANDARD SHAPES AND SIZES OF BRICK

SEE SCHEDULE FOR FINISHED FACES OF BRICK STRETCHER UNITS



S, S2, S2D, S81, S81D

S-Sm, SD S3

SA, S2A

S2B

S1, S2H, S3H, S1D

SCHEDULE OF FINISH ON BRICK STRETCHER UNITS

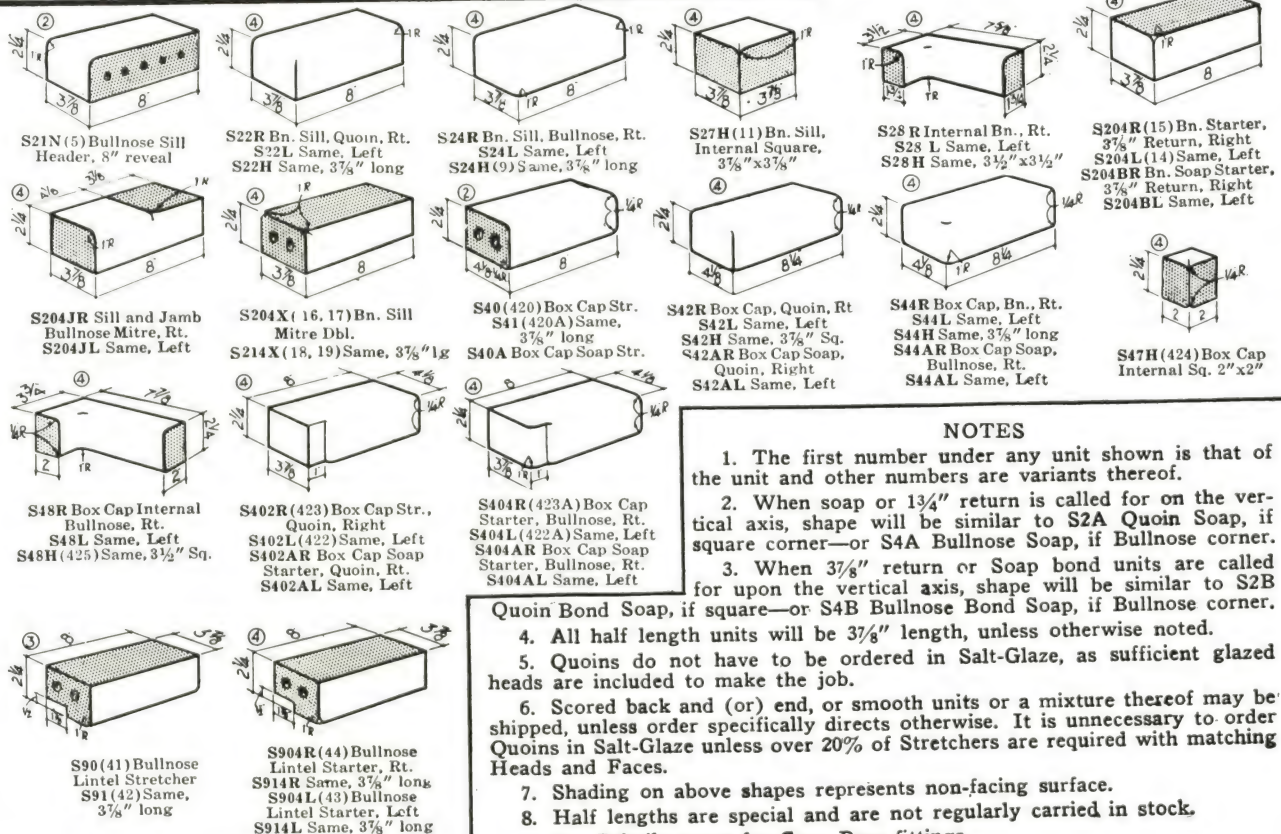
	BACK	SIZE	Ceramic Glaze			Salt-Glaze		
			Glaze Faces	Ends	Shape No.	Glaze Faces	Ends	Shape No.
Stretcher	† Scored	3 7/8 x 2 1/4 x 8	1	0	S	1	*1	S
"	Smooth	3 7/8 x 2 1/4 x 8				‡2	*1	SSm
" half length	† Scored	3 7/8 x 2 1/4 x 3 7/8	1	0	S1	1	*1	S1
Header	†	8 x 2 1/4 x 3 7/8	0	1	S81	*1	‡2	S81
Stretcher Soap	"	1 3/4 x 2 1/4 x 8	1	0	SA	1	*1	SA
" " half length	"	1 3/4 x 2 1/4 x 3 7/8	1	0	S1A	1	*1	S1A
Quoin	†	3 7/8 x 2 1/4 x 8	1	1	S2			
" half length	†	3 7/8 x 2 1/4 x 3 7/8	1	1	S2H			
Quoin Bond Soap, 3/8" Ret.	"	1 3/4 x 2 1/4 x 8	1	1	S2B	1	1	S2B
" " " 3/8" Ret. half lgth.	"	1 3/4 x 2 1/4 x 3 7/8	1	1	S2BH	1	1	S2BH
Quoin Bond Soap, 1 3/4" Ret.	"	1 3/4 x 2 1/4 x 8	1	1	S2A			
" " " 1 3/4" Ret. half lgth.	"	1 3/4 x 2 1/4 x 3 7/8	1	1	S2AH			
2 Faced Stretcher	Smooth	3 7/8 x 2 1/4 x 8	2	0	SD	2	*1	SD
" " " half length	"	3 7/8 x 2 1/4 x 3 7/8	2	0	S1D	2	*1	S1D
" " " with Quoin	"	3 7/8 x 2 1/4 x 8	2	1	S3			
" " " Half	"	3 7/8 x 2 1/4 x 3 7/8	2	1	S3H			
Double Quoin	† Scored	3 7/8 x 2 1/4 x 8	1	2	S2D	1	2	S2D
Double Header	Smooth	8 x 2 1/4 x 3 7/8	0	2	S81D	*1	2	S81D

* Glazed but not selected for color.

† Two faces glazed, but only one selected for color.

‡ Two heads glazed, but only one selected for color.

Scoring back and (or) end, or smooth units or a mixture thereof may be shipped, unless order specifically directs otherwise. It is unnecessary to order Quoins in Salt-Glaze unless over 20% of Stretchers are required with matching Heads and Faces.



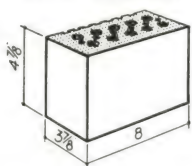
NOTE: The number superimposed upon drawings gives shape class thereof.

NOTES

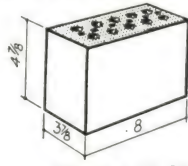
1. The first number under any unit shown is that of the unit and other numbers are variants thereof.
2. When soap or 1 3/4" return is called for on the vertical axis, shape will be similar to S2A Quoin Soap, if square corner—or S4A Bullnose Soap, if Bullnose corner.
3. When 3/8" return or Soap bond units are called for upon the vertical axis, shape will be similar to S2B Quoin Bond Soap, if square—or S4B Bullnose Bond Soap, if Bullnose corner.
4. All half length units will be 3 7/8" length, unless otherwise noted.
5. Quoins do not have to be ordered in Salt-Glaze, as sufficient glazed heads are included to make the job.
6. Scored back and (or) end, or smooth units or a mixture thereof may be shipped, unless order specifically directs otherwise. It is unnecessary to order Quoins in Salt-Glaze unless over 20% of Stretchers are required with matching Heads and Faces.
7. Shading on above shapes represents non-facing surface.
8. Half lengths are special and are not regularly carried in stock.
9. See Brittile pages for Cove Base fittings.
10. See Artile page for Rowlock fittings.

STANDARD SHAPES AND SIZES OF "BRICITILE"

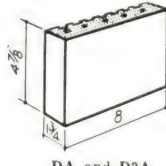
SEE SCHEDULE FOR FINISHED FACES OF BRICITILE STRETCHER UNITS



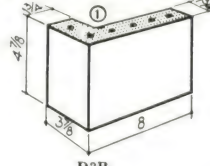
D, D2, D2D, D81 and D81D



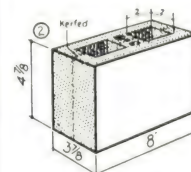
D-Sm and DD D3



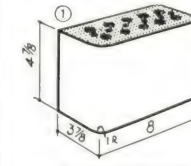
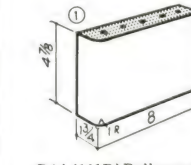
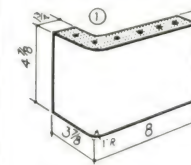
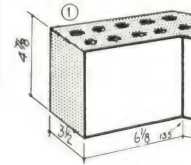
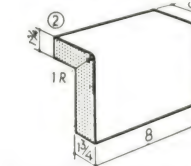
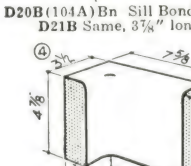
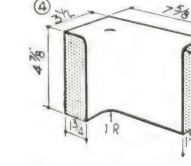
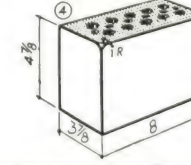
DA and D2A



D2B



DC Conduit Stretcher

D4(101) Bullnose
D4H(130) Same, 3 7/8" longD4A(101D) Bullnose Soap
D4AH Same, 3 7/8" longD4B(101C) Bn Bond Soap
D4BH Same, 3 7/8" longD9(148)
Internal OctagonD8(103)
Internal BullnoseD20B(104A) Bn Sill Bond Soap
D21B Same, 3 7/8" longD28R Bullnose Sill Soap,
Internal Bullnose, Right
D28L Same, Left
D28H(111A) Same, 3 1/2" SqD204R(115) Bullnose Starter,
3 7/8" Return, Right
D204L(114) Same, Left
D204BR Bullnose Soap Starter,
3 7/8" Return, Right
D204BL Same, Left

SCHEDULE OF FINISH ON BRICITILE STRETCHER UNITS

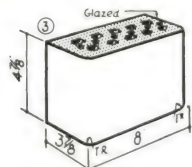
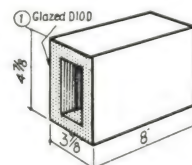
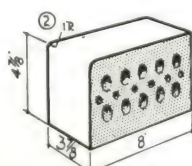
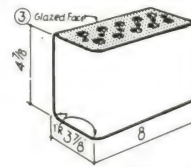
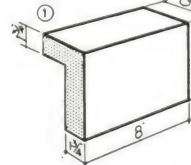
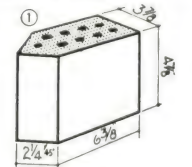
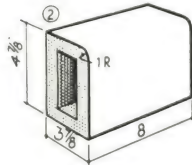
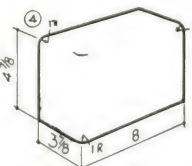
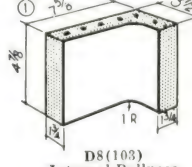
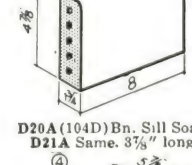
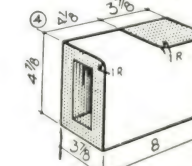
	BACK	SIZE	Ceramic Glaze			Salt-Glaze		
			Glaze	Shape	No.	Glaze	Shape	No.
			Faces	Ends		Faces	Ends	
Stretcher	† Scored	3 7/8 x 4 7/8 x 8	1	0	D	1	*1	D
"	Smooth	" x " x "				‡ 2	*1	D Sm
" half length	† Scored	" x " x 3 7/8	1	0	D1	1	*1	D1
Header	†	8 x 4 7/8 x 3 7/8	0	1	D81	*1	‡ 2	D81
Stretcher Soap	†	1 3/4 x 4 7/8 x 8	1	0	DA	1	*1	DA
" half length	†	" x " x 3 7/8	1	0	D1A	1	*1	D1A
6" Stretcher	†	5 7/8 x 4 7/8 x 8	1	0	D60	1	*1	D60
6" half length	†	" x " x 3 7/8	1	0	D61	1	*1	D61
8" Stretcher	†	8 x 4 7/8 x 8	1	0	D80	1	0	D80
Quoin	†	3 7/8 x 4 7/8 x 8	1	1	D2			
" half length	†	" x " x 3 7/8	1	1	D2H			
Quoin Bond Soap, 3 7/8" Ret.	†	1 3/4 x 4 7/8 x 8	1	1	D2B	1	1	D2B
" 3 7/8" Ret. half lgth.	†	" x " x 3 7/8	1	1	D2BH	1	1	D2BH
Quoin Soap, 1 3/4" Ret.	†	" x " x 8	1	1	D2A			
" 1 3/4" Ret. half lgth.	†	" x " x 3 7/8	1	1	D2AH			
6" Quoin	†	5 7/8 x 4 7/8 x 8	1	1	D62			
6" half length	†	" x " x 3 7/8	1	1	D62H			
2 Faced Stretcher	Smooth	3 7/8 x 4 7/8 x 8	2	0	DD	2	*1	DD
" half length	"	" x " x 3 7/8	2	0	D1D	2	*1	D1D
" with Quoin	"	" x " x 8	2	1	D3			
" Half	"	" x " x 3 7/8	2	1	D3H			
Double Quoin	Scored	" x " x 8	1	2	D2D	1	2	D2D
Double Header	Smooth	8 x 4 7/8 x 3 7/8	0	2	D81D	*1	2	D81D
2 Faced 6" Stretcher	Smooth	5 7/8 x 4 7/8 x 8	2	0	D60D	2	*1	D60D
" 8"	"	8 x 4 7/8 x 8	2	0	D80D	2	0	D80D

* Glazed but not selected for color.

† Two faces glazed, but only one selected for color.

‡ Two heads glazed, but only one selected for color.

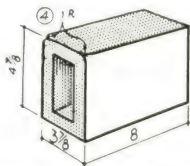
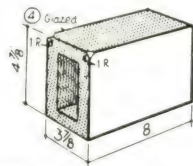
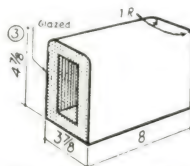
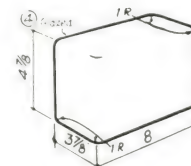
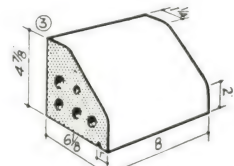
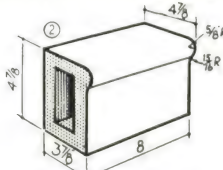
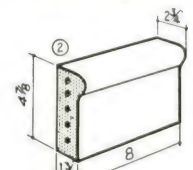
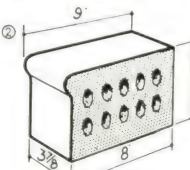
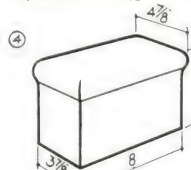
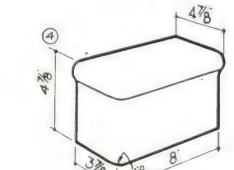
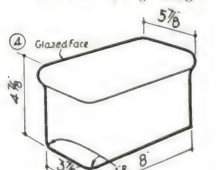
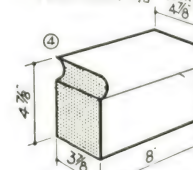
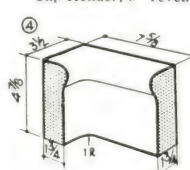
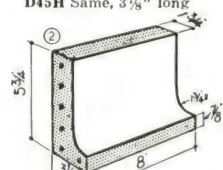
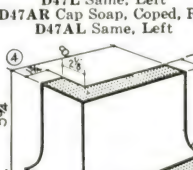
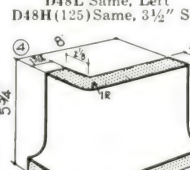
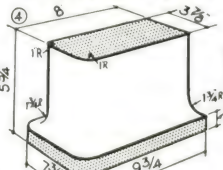
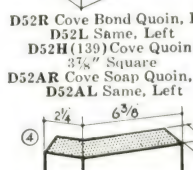
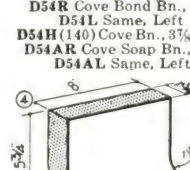
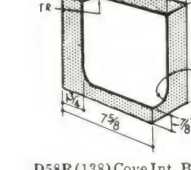
+ Scored back and (or) end, or smooth units or a mixture thereof may be shipped, unless order specifically directs otherwise. It is unnecessary to order Quoins in Salt-Glaze unless over 20% of Stretchers are required with matching Heads and Faces.

D4D(102)
Double BullnoseD10(147) Square Sill
D11 Same, 3 7/8" long
D10D Square CopingD21N(105) Bullnose Sill
Header, 8" revealD5(101A) Bullnose End
D5H(101B) Same, 3 7/8" longD10B(147A) Sq. Sill
Bond Soap
D11B Same, 3 7/8" longD6(128)
OctagonD20(104) Bullnose Sill
D21 Same, 3 7/8" longD24R Bn. Sill, Bullnose, Rt
D24L Same, Left
D24H Same, 3 7/8" long
D24AR Bullnose Sill Soap,
Bullnose, Right
D24AL Same, Left
D24BR Bullnose Sill Bond
Soap, Bullnose, Right
D24BL Same, LeftD20A(104D) Bn. Sill Soap
D21A Same, 3 7/8" longD27R Bullnose Sill Soap,
Internal Square, Right
D27L Same, Left
D27H(111) Same, 1 1/4" SqD204JR Sill and Jamb
Bullnose Mitre, Right
D204JL Same, Left

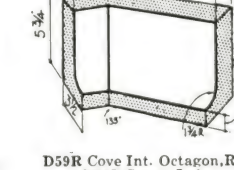
Any Brictile shapes will be furnished unglazed except Cove shapes.

NOTE: The number superimposed upon drawings gives shape class thereof.

STANDARD SHAPES AND SIZES OF "BRICTILE"

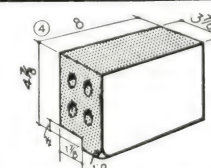
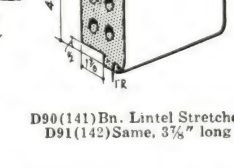
D204X (116, 117) Bn. Sill Mitre Dbl.
D214X (118, 119) Same, 3 7/8" longD305 (114A) Coping Bn. Starter
D315 Same, 3 7/8" longD30 (104B) Coping Bullnose
D31 (104C) Same, 3 7/8" longD34 (109A) Coping Bn. End
D34H Same, 3 7/8" longD820 Slope Sill
StretcherD40 (120) Cap Stretcher
D41 Same, 3 7/8" longD40A (120A) Cap Soap Str.
D41A Same, 3 7/8" longD41N (121)
Cap Header, 8" reveal,D42R Cap, Quoin, Right
D42L Same, Left
D42H (126) Same, 3 7/8" Sq.
D42AR Cap Soap, Quoin, Rt.
D42AL Same, Left
D42BR Cap Bond Soap, Qn., Rt.
D42BL Same, LeftD44R Cap, Bullnose, Right
D44L Same, Left
D44H (127) Same, 3 7/8" Square
D44AR Cap Soap, Bn., Rt.
D44AL Same, Left
D44BR Cap Bond Soap, Bn., Rt.
D44BL Same, LeftD45 (127A) Cap Bullnose End
D45H Same, 3 7/8" longD47R Cap, Coped, Right
D47L Same, Left
D47AR Cap Soap, Coped, Rt.
D47AL Same, LeftD48R Cap Internal Bn., Rt.
D48L Same, Left
D48H (125) Same, 3 1/2" Sq.D402R (123) Cap Starter,
Quoin, Right
D402L (122) Same, Left
D402AR Cap Soap Starter,
Quoin, Right
D402AL Same, Left
D402BR Cap Bond Soap
Starter, Quoin, Right
D402BL Same, LeftD404R (123A) Cap Starter,
Bullnose, Right
D404L (122A) Same, Left
D404AR Cap Soap Starter,
Bullnose, Right
D404AL Same, Left
D404BR Cap Bond Soap
Starter, Bullnose, Right
D404BL Same, LeftD50 (131) Cove Soap Stretcher
D51 (132) Same, 3 7/8" longD52R Cove Bond Quoin, Rt.
D52L Same, Left
D52H (139) Cove Quoin,
3 7/8" Square
D52AR Cove Soap Quoin, Rt.
D52AL Same, LeftD54R Cove Bond Bn., Rt.
D54L Same, Left
D54H (140) Cove Bn., 3 7/8" Sq.
D54AR Cove Soap Bn., Rt.
D54AL Same, LeftD58R (135) Cove Int. Bn., Rt.
D58L (137) Same, LeftD59R Cove Int. Octagon, Rt.
D59L Same, Left
D59H Same, 2" x 2"D55 (140A) Cove Bullnose End
D55H Same, 3 7/8" longD56R Cove Ext. Octagon, Rt.
D56L Same, Left
D56H Same, 2 1/4" x 2 1/4"D57R (136) Cove, Coped, Rt.
D57L (135) Same, LeftD520 Round Top Cove Str.
D521 Same, 3 7/8" long

For fittings in the above series drop the last number above and the first number of the fittings desired and combine the two. Example: A round corner would be the combination of D52 and 4 or D524.

D70 Square Lintel Stretcher
D71 Same, 3 7/8" long

NOTES

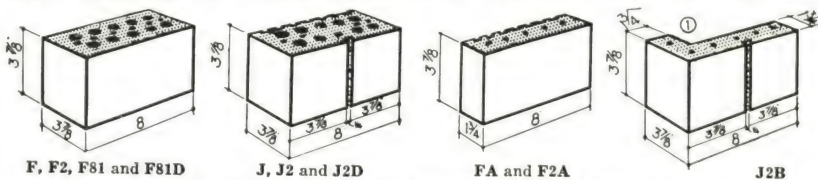
1. The first number under any unit shown is that of the unit and other numbers are variants thereof.
2. When soap or 1 1/4" return is called for on the vertical axis, shape will be similar to D2A Quoin Soap, if square corner — or D4A Bullnose Soap, if Bullnose corner.
3. When 3/8" return or Soap bond units are called for upon the vertical axis, shape will be similar to D2B Quoin Bond Soap, if square — or D4B Bullnose Bond Soap, if Bullnose corner.
4. All half length units will be 3 7/8" length, unless otherwise noted.
5. Quoins do not have to be ordered in Salt-Glaze, as sufficient glazed heads are included to make the job.
6. Scored back and (or) end, or smooth units or a mixture thereof may be shipped, unless order specifically directs otherwise. It is unnecessary to order Quoins in Salt-Glaze unless over 20% of Stretchers are required with matching Heads and Faces.
7. Shading on above shapes represents non-facing surface.
8. Half lengths are special and are not regularly carried in stock.

D904R (144) Bullnose Lintel
Starter, Right
D914R Same, 3 7/8" long
D904L (143) Bullnose Lintel
Starter, Left
D914L Same, 3 7/8" longD90 (141) Bn. Lintel Stretcher
D91 (142) Same, 3 7/8" long

It is recommended that D10, D20, and D305 be used as suspended lintel in preference to D70, D90 and D904 Right or Left.

STANDARD SHAPES AND SIZES OF "ARTILE"

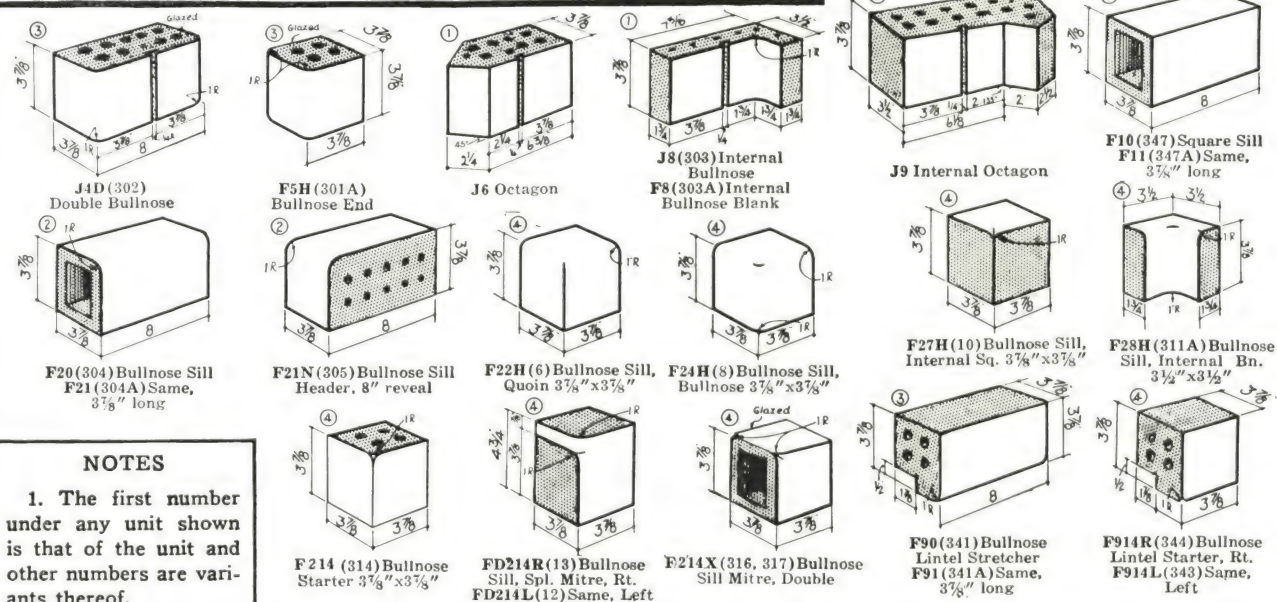
SEE SCHEDULE FOR FINISHED FACES OF ARTILE STRETCHER UNITS



SCHEDULE OF FINISH ON ARTILE STRETCHER UNITS

	BACK	SIZE	CERAMIC GLAZE		
			Glaze		Shape No.
Stretcher	*Scored	3 7/8 x 3 7/8 x 8	1	0	J
" Blank	"	3 7/8 x 3 7/8 x 8	1	0	F
" 3/4" length	"	3 7/8 x 3 7/8 x 5 7/8	1	0	JF6
" half length	"	3 7/8 x 3 7/8 x 3 7/8	1	0	F1
Header	"	8 x 3 7/8 x 3 7/8	0	1	F81
Stretcher Soap	"	1 3/4 x 3 7/8 x 8	1	0	JA
" Blank	"	1 3/4 x 3 7/8 x 8	1	0	FA
" 3/4" length	"	1 3/4 x 3 7/8 x 5 7/8	1	0	JA F6
" half length	"	1 3/4 x 3 7/8 x 3 7/8	1	0	F1A
Quoin	"	3 7/8 x 3 7/8 x 8	1	1	J2
" Blank	"	3 7/8 x 3 7/8 x 8	1	1	F2
" 3/4" length	"	3 7/8 x 3 7/8 x 5 7/8	1	1	J2F6
" half length	"	3 7/8 x 3 7/8 x 3 7/8	1	1	F2H
Quoin Bond Soap, 3/4" Ret.	"	1 3/4 x 3 7/8 x 8	1	1	J2B
" half length	"	1 3/4 x 3 7/8 x 3 7/8	1	1	F2BH
Quoin Soap	"	1 3/4 x 3 7/8 x 3 7/8	1	1	J2A
" Blank	"	1 3/4 x 3 7/8 x 3 7/8	1	1	F2A
" 3/4" length	"	1 3/4 x 3 7/8 x 3 7/8	1	1	J2BF6
" half length	"	1 3/4 x 3 7/8 x 3 7/8	1	1	F2AH
Double Quoin	"	3 7/8 x 3 7/8 x 8	1	2	J2D
" Blank	"	3 7/8 x 3 7/8 x 8	1	2	F2D
" Header	"	8 x 3 7/8 x 3 7/8	0	2	F81D

* Scored back or end or smooth.



NOTES

1. The first number under any unit shown is that of the unit and other numbers are variants thereof.

2. When soap or 1 3/4" return is called for on the vertical axis, shape will be similar to J2A Quoin Soap, if square corner—or J4A Bullnose Soap, if Bullnose corner.

3. When 3 7/8" return or Soap bond units are called for upon the vertical axis, shape will be similar to J2B Quoin Bond Soap, if square—or J4B Bullnose Bond Soap, if Bullnose corner.

4. All half length units will be 3 7/8" length, unless otherwise noted.

5. Scored back and (or) end, or smooth units or a mix-

ture thereof may be shipped, unless order specifically directs otherwise.

6. Shading on above shapes represents non-facing surface.

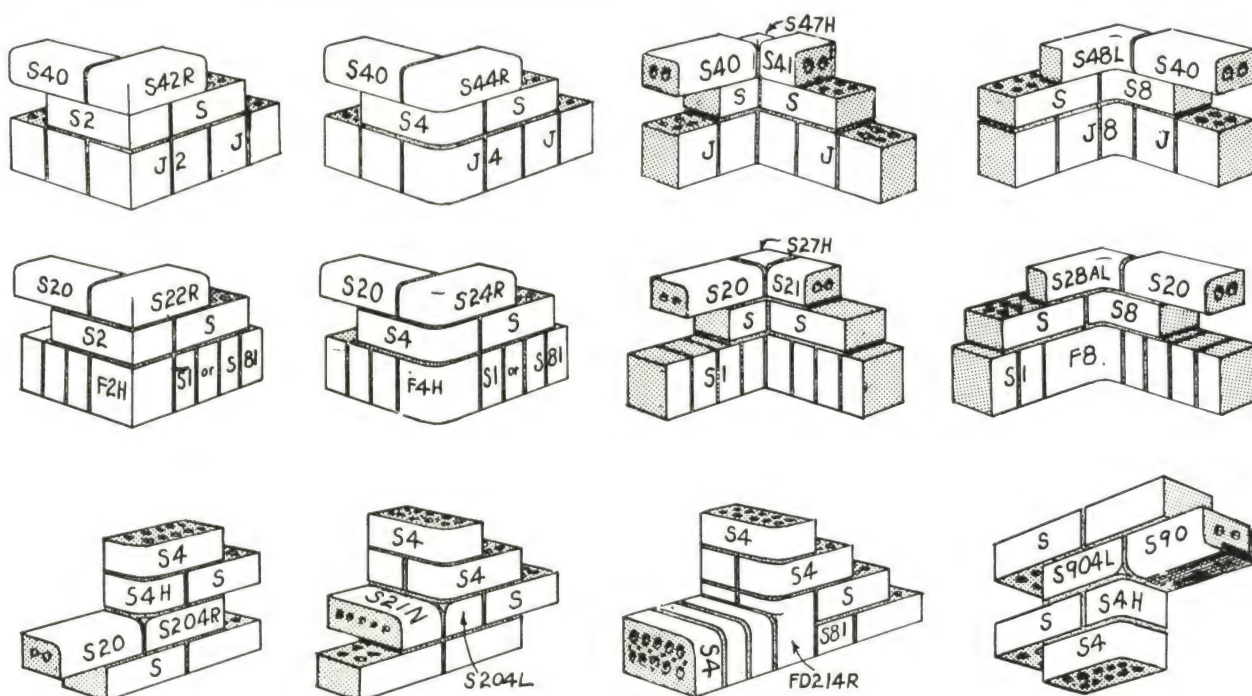
7. Half lengths are special and are not regularly carried in stock.

8. When the prefix in this series is J, unit has false mortar joint. When prefix is F, unit has blank face.

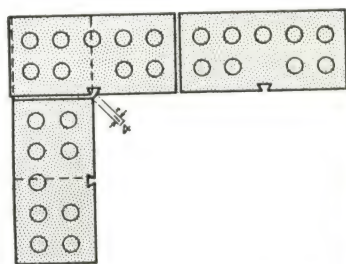
9. See Brictile pages for Cove fittings.

10. See Brictile pages for 4 7/8" high Cap Mould fittings. See Brick page for 2 1/4" high Box Cap fittings.

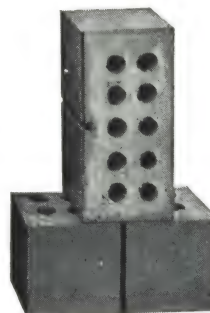
DETAILS OF BRICK SILLS, JAMBS, LINTELS AND CORNERS



DETAILS OF "ARTILE" WALL SECTIONS

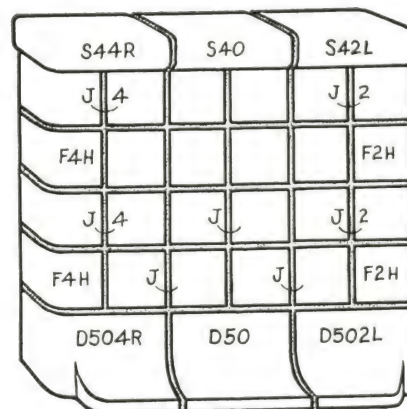
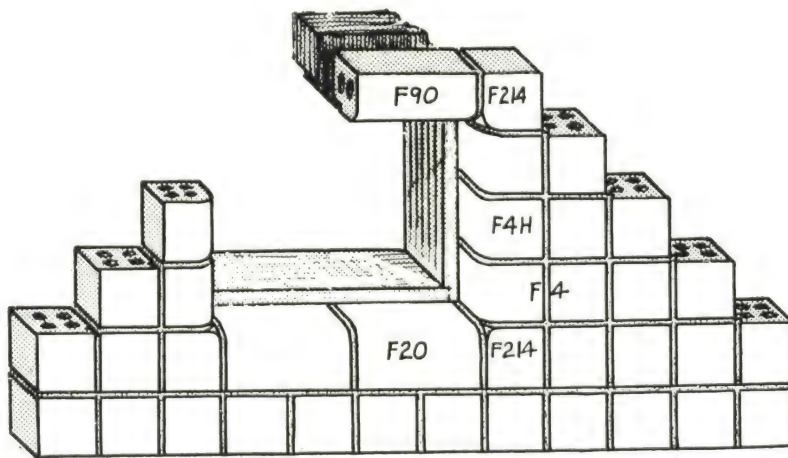


Detail Showing Bonding of Internal Angle

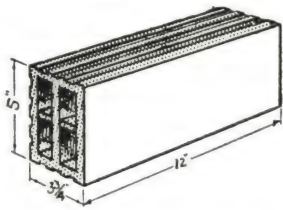


NOTE

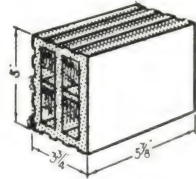
The photographic panel reproduced at the left shows an "Artile" panel. Figures 1, 2 and 3 are half "Artile" with a bed and cross joint. This panel has been subjected to very rigid tests to determine the strength of the mortar in the dovetailed joint. After the tests were completed the mortar in the dovetail joints of three whole "Artile" remained intact, while all other joints were broken.



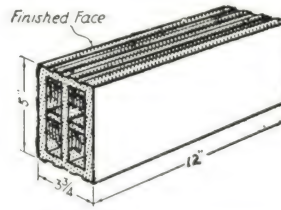
FACE TILE SHAPES—5" x 12" FACE SERIES



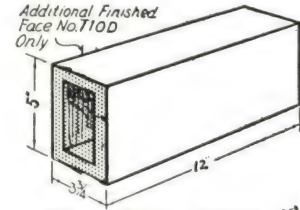
TC (TC400) Stretcher S1S



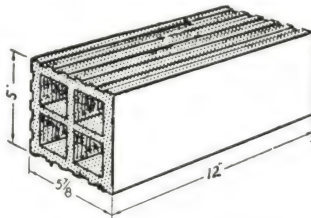
TC1 (TC400H) Stretcher Half S1S



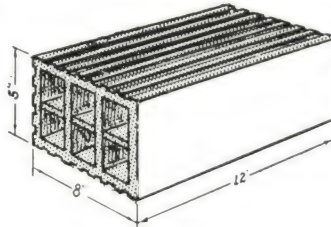
TCD (TC400D) Stretcher S2S
TC1D (TC400DH) Stretcher Half S2S



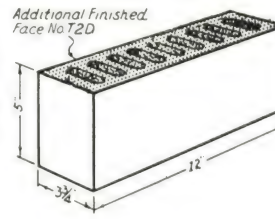
T10 (TC434) Square Sill Stretcher
T10D (TC434D) Square Coping Stretcher
T11 (TC434H) Square Sill Stretcher Half
T10B (T234) Soap Square Sill Stretcher



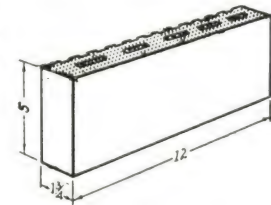
TC60 (TC600) 5 3/4" Stretcher S1S
TC60D (TC600D) 5 3/4" Stretcher S2S
TC61 (TC600H) 5 3/4" Stretcher Half S1S
TC61D (TC600DH) 5 3/4" Stretcher Half S2S



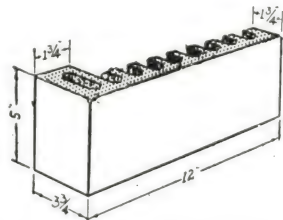
TC80 (TC800) 8" Stretcher S1S
TC80D (TC800D) 8" Stretcher S2S
TC81 (TC800H) 8" Stretcher Half S1S
TC81D (TC800DH) 8" Stretcher Half S2S



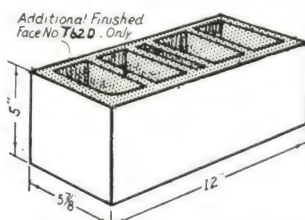
T2 (T404) Square Full Closure
T2H (T404H) Square Full Closure Half
T2D (T404D) Square Full Double Closure



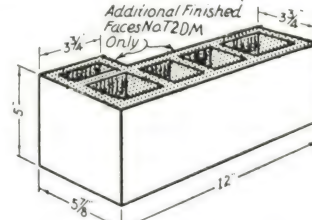
T2A (T202) Soap



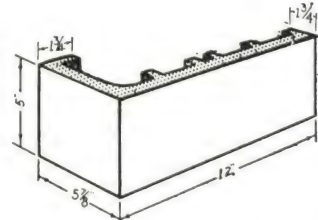
T2B (T204) Soap Square Full Closure



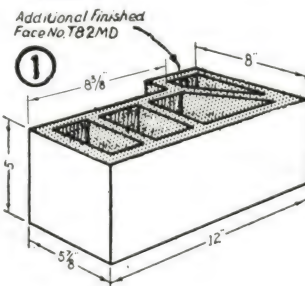
T62 (TC606) Square 5 7/8" Full Closure
T62D (TC606D) Square 5 7/8" Full Double Closure
T62H (TC606H) Square 5 7/8" Full Closure Half



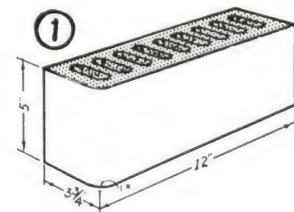
T2M (TC406) Square Full Closure 5 7/8" Return
T2MD (TC406D) Square Double Closure 5 7/8" Return



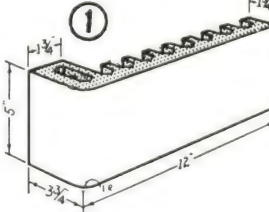
T2E (T206) Soap Square Full Closure 5 7/8" Return



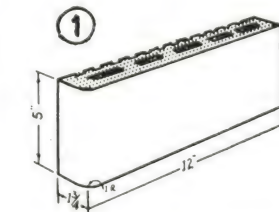
T82M (TC806) External Square Corner
T82MD (TC806D) External Internal Square Corner



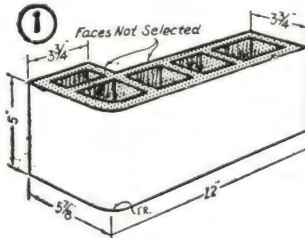
T4 (T414) Bullnose Full Closure
T4H (T414H) Bullnose Full Closure Half



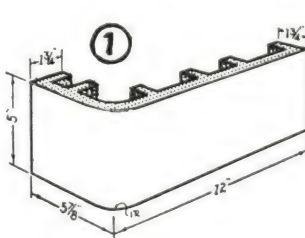
T4B (T214) Soap Bullnose Full Closure
T4BH (T214H) Soap Bullnose Full Closure Half



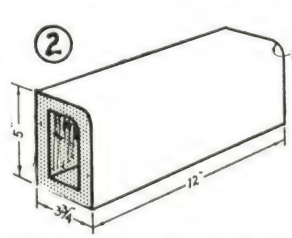
T4A (T212) Soap Bullnose Closure 1 3/4" Return
T4AH (T212H) Soap Bullnose Closure 1 3/4" Return Half



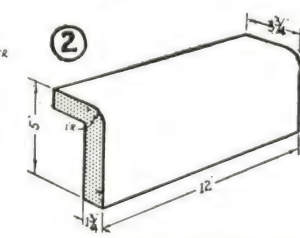
T4M (TC416) Bullnose Full Closure 5 7/8" Return



T4E (TC216) Soap Bullnose Full Closure 5 7/8" Return



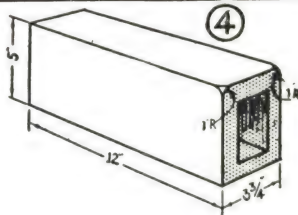
T20 (T444) Bullnose Sill Stretcher
T21 (T444H) Bullnose Sill Stretcher Half



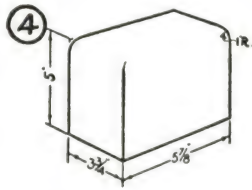
T20B (T244) Soap Bullnose Sill Stretcher 3 3/4" Return
T20A (T242) Soap Bullnose Sill Stretcher 1 3/4" Return

Note: Shaded areas on the above illustration may be scored or smooth but not selected for facing.
Note: First shape number below each unit represents the unit shown, all other shape numbers are variants thereof.
Note: S1S smooth one side, S2S smooth two sides.
Note: The number superimposed upon drawings gives shape class thereof.

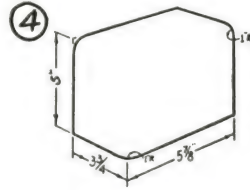
FACE TILE SHAPES 5" x 12" FACE SERIES (Continued)



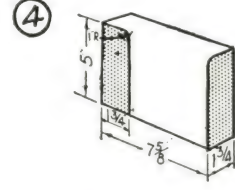
T305 (T4101) Bullnose Sill Starter
T315 (T4101H) Bullnose Sill Starter Half



T22HR (T4443R) Bullnose External Square Corner, Right
T22HL (T4443L) Bullnose External Square Corner, Left
T22AHR (T2443R) Soap Bullnose External Square Corner, Right
T22AHL (T2443L) Soap Bullnose External Square Corner, Left



T24HR (T4444R) Bullnose External Round Corner, Right
T24HL (T4444L) Bullnose External Round Corner, Left
T24AHR (T2444R) Soap Bullnose External Round Corner, Right
T24AHL (T2444L) Soap Bullnose External Round Corner, Left

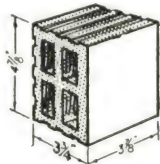


T27HR (T2425) Bullnose Internal Square Corner, Right
T27HL Same Left

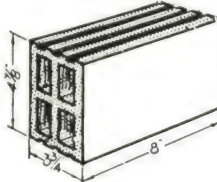
4 7/8" X 8" FACE SERIES



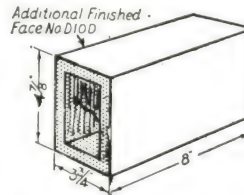
DC (DC400) Stretcher S1S



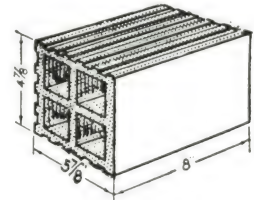
DC1 (DC400H) Stretcher Half S1S



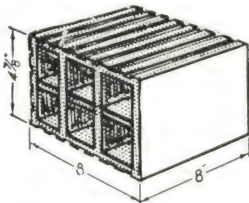
DCD (DC400D) Stretcher S2S
DC1D (DC400DH) Stretcher Half S2S



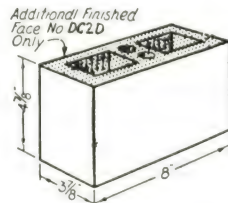
DC10 (DC434) Square Sill Stretcher
DC10D (DC434D) Square Coping Stretcher
DC11 (DC434H) Square Sill Stretcher Half
DC10B (DC234) Soap Square Sill Stretcher



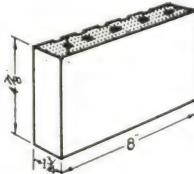
DC60 (DC600) 5 7/8" Stretcher S1S
DC60D (DC600D) 5 7/8" Stretcher S2S
DC61 (DC600H) 5 7/8" Stretcher Half S1S
DC61D (DC600DH) 5 7/8" Stretcher Half S2S



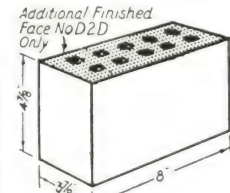
DC80 (DC800) 8" Stretcher S1S
DC80D (DC800D) 8" Stretcher S2S
DC81 (DC800H) 8" Stretcher Half S1S
DC81D (DC800DH) 8" Stretcher Half S2S



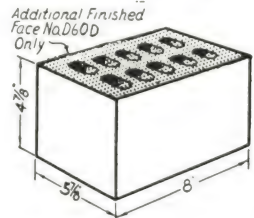
DC2 (DC404) Square Full Closure
DC2D (DC404D) Square Full Double Closure
D2B (D204) Soap Square Full Closure



D2A (D202) Soap



D2 (D404) Unglazed Brictile Type Closure
D2D (D404D) Unglazed Brictile Type Two Faced Closure

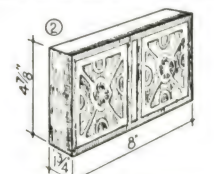


D60 (D606) Square 5 7/8" Full Closure
D61 (D606H) Square 5 7/8" Full Closure Half
D60D (D606D) Square 5 7/8" Full Double Closure

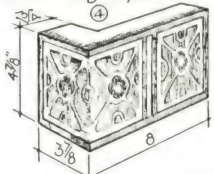
Any Brictile shapes will be furnished unglazed except Cove shapes.

BRICK AND "BRICTILE" DESIGN CAPS

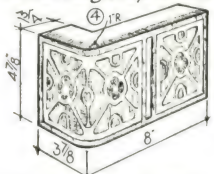
Stark is herewith presenting a new departure in Cap Mould or Band Course treatment. The units here shown are made with recessed scoring, forming the design which may be filled in upon the job with the regular mortar used, giving the appearance shown in the center pictures. Brictile units will have a half inch glazed reveal upon the top, and Brick units upon both top and bottom for plastering purposes, when used as a Cap. Units will be priced the same as regular Cap Mould in Brick and Brictile and will be furnished only in Ceramic Trim Shades. Additional designs of the same and larger sizes, including inserts in two to six colors, are available for special purposes.



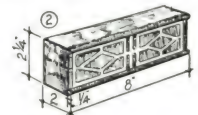
D1040-Design Cap Stretcher



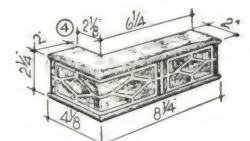
D1042-Design Cap Quoin



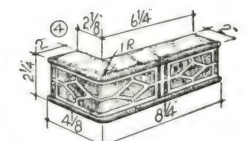
D1044-Design Cap Bullnose



S1040-Design Cap Stretcher

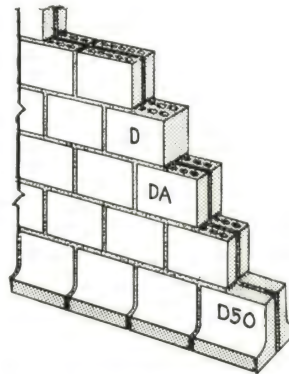
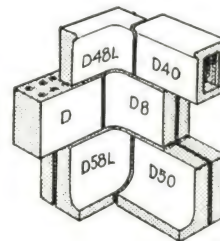
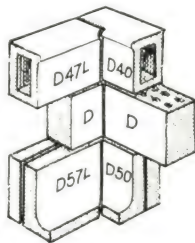
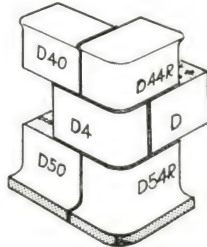
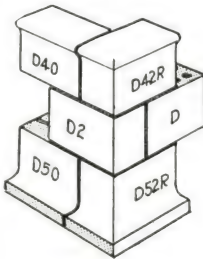
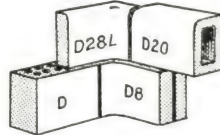
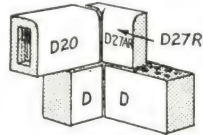
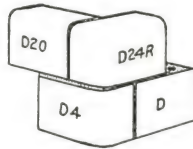
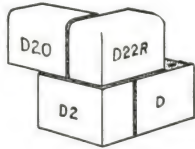


S1042-Design Cap Quoin



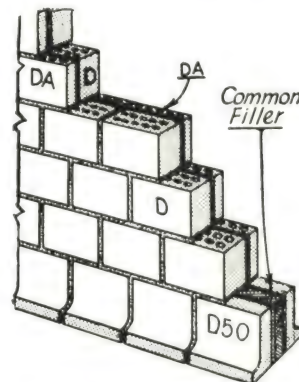
S1044-Design Cap Bullnose

DETAILS OF "BRICKTILE" WALL SECTIONS

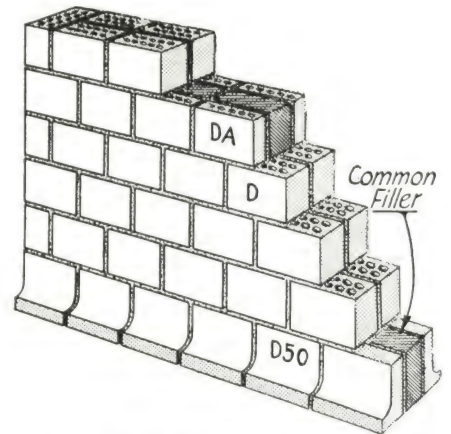


Bond of Four-inch Wall of "Bricktile" Soaps, "tied" with Standard "Bricktile"

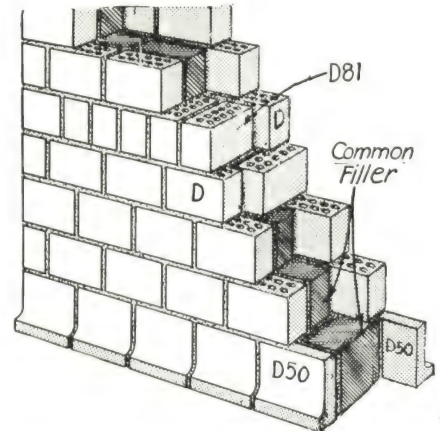
All material selected to provide a face on each side of wall



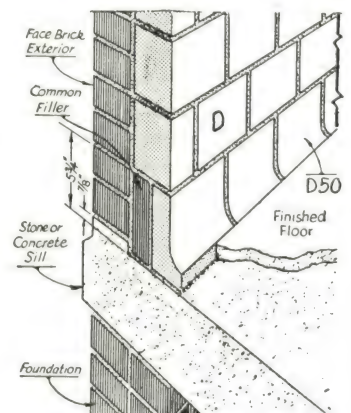
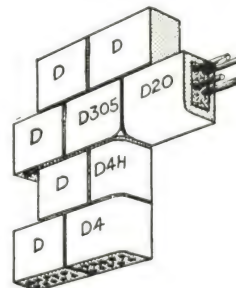
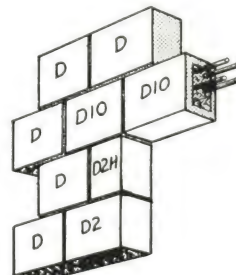
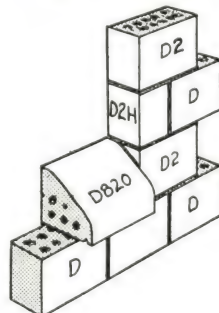
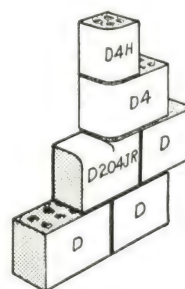
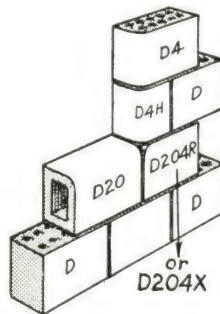
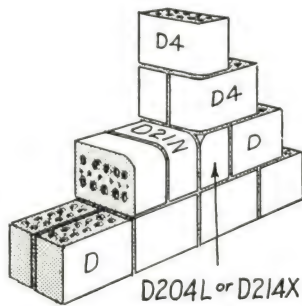
Bond of Six-inch Wall of "Bricktile" Soaps and Standard "Bricktile"



Bond of Eight-inch Wall of Standard "Bricktile" "tied" with Secret Common Filler and "Bricktile" Soaps, Stretcher Face, Showing on Both Sides of Wall

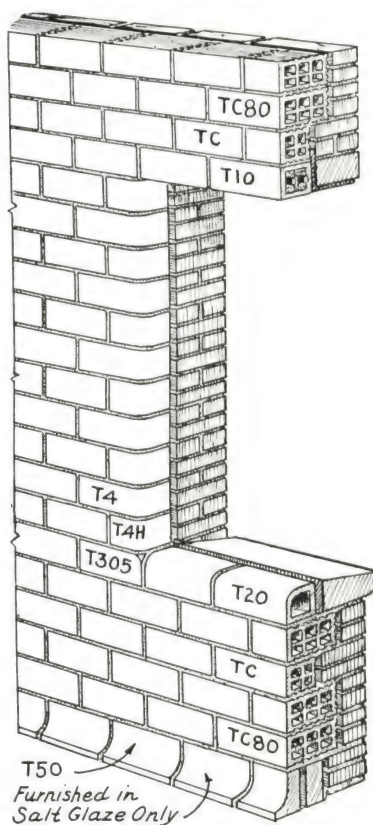


Bond of Twelve-inch, using Standard "Bricktile" and Common Filler Header Face, Showing on Each Side of Wall on Alternate Bonding Courses

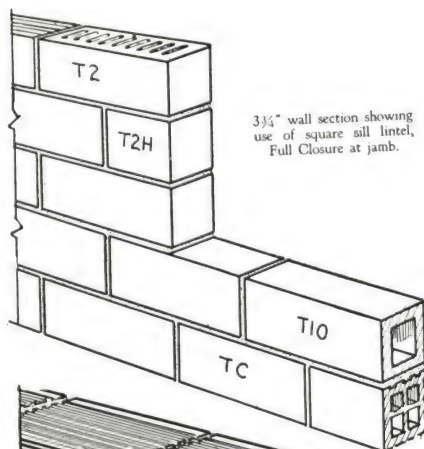


Section of Eight-inch Exterior Wall Faced with "Bricktile," Showing Detail of Concrete or Stone Sill to Accommodate 5/8-in. Cove Base

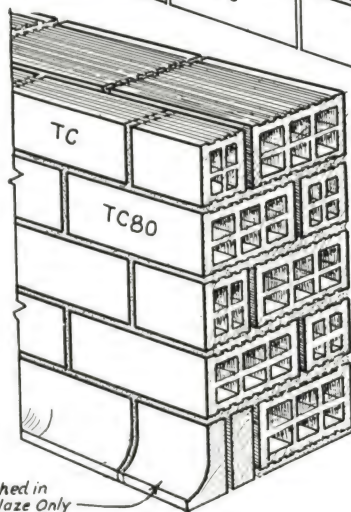
DETAIL OF 5" x 12" FACE TILE WALL SECTIONS



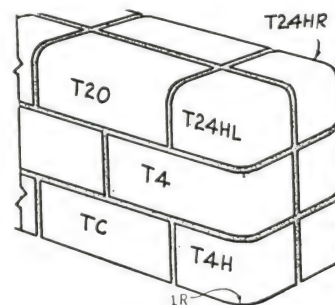
SHOWS A TYPICAL 13" WALL SECTION.
Face Tile Interior, Brick Exterior.



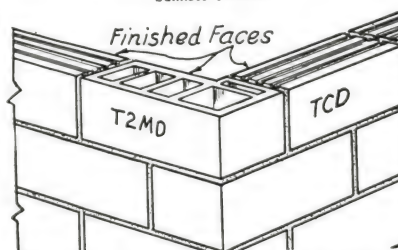
3 3/4" wall section showing
use of square sill lintel,
Full Closure at jamb.



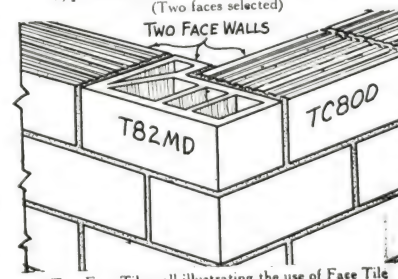
13" Face Tile wall (smooth two sides)



8" Free standing wall showing use of
bullnose closures.



3 3/4" Face Tile wall showing the use of corner tile
(Two faces selected)



8" Two Face Tile wall illustrating the use of Face Tile
corners. (Two Face selected).

DATA RELATIVE TO JOBS ILLUSTRATED ON COVERS

- (1) High School Gymnasium, Hawthorn, N. J.
Architect: Fanning & Thaw
General Contractor: Bontempo and D'Annunzio, Morristown, N. J.
Interior: Stark Colorglaze "Brictile" No. 680 with "Artile" Trim No. 900 and No. 940
- (2) Detroit Creamery, Detroit, Mich.
Owner: National Dairies, Inc.
Architect: N. Krecke
General Contractor: Kriehoff Company
Interior: Stark Salt Glazed Creamtone "Brictile" and Shapes, with No. 950 Cove Base
- (3) Gordon's London Gin Distillery, Linden, N. J.
Owner: Distillers Co. of America Ltd., Linden, N. J.
Architect: Howard Chapman
Contractor: Turner Construction Company
Interior: Stark Colorglaze "Brictile" No. 681, with No. 596 Trim. Detail showing non-trash sill.
- (4) Canton Post Office, Canton, Ohio
Architect: Firestone and Christman
General Contractor: Gibbons and Grable
Interior: Stark Salt Glazed Creamtone Brick
- (5) Acme Dairy, Massillon, Ohio
Engineers: The McCormick Company
General Contractor: E. E. Boyd Company
Exterior: Stark Colorglaze Brick No. 682 with No. 596 Trim and Stark Inserts
- (6) Theodore Roosevelt Jr. High School, West Orange, N. J.
Architect: Hecker and Hecker, Fort Lee, N. J.
General Contractor: Charles J. Smith, Trenton, N. J.
Interior: Stark Colorglaze "Brictile" No. 680 with No. 950 and No. 570 "Artile" Dado
- (7) Hi-Speed Super Station, Warren, Ohio
Owner: The Hickok Oil Company, Toledo, Ohio
Architect: Philip Sherman, Defiance, Ohio
Contractor: The Baker and Shindler Contracting Company, Defiance, Ohio
Exterior: Stark Colorglaze "Brictile" No. 520 with No. 596 Trim
Interior: Stark Unglazed Face Tile
- (8) Model Home of America, Atlantic City, N. J.
Architect: William F. B. Koelle
Supervising Architect: Rosenstein and Turon
Builder: Mahoney Construction Company
Interior: Stark Colorglaze "Brictile" No. 680 Field with No. 950 Trim
- (9) Meyer Dairy, Cleveland, Ohio
Owner: Meyer Dairy Products Company
Architect: A. J. Simon
General Contractor: The Albert M. Higley Company
Interior: Stark Coated Salt Glazed "Brictile" No. 900 with No. 950 Trim and Stark Dairy Type Floor Brick
- (10) Modernized Basement Recreation Room, Canton, Ohio
Owner: R. P. Christian
Interior: Stark Coated Salt Glazed "Brictile" No. 900 with No. 950 Trim and Stark Inserts



1. Hawthorn High School, Hawthorn, New Jersey.
2. Detroit Creamery, Detroit, Michigan.
3. Gordon's Gin Distillery, Linden, New Jersey.
4. Main Post Office, Canton, Ohio.
5. Acme Dairy, Massillon, Ohio.
6. Theodore Roosevelt High School, West Orange, New Jersey.
7. Hi-Speed Super Station, Warren, Ohio.
8. Model Home of America, Atlantic City, New Jersey.
9. Meyer Dairy, Cleveland, Ohio.
10. Basement Recreation & Game Room.



THE WYANDOT CLAY PRODUCTS CO.

UPPER SANDUSKY, OHIO

REPRESENTED IN ALL LEADING CITIES OF THE UNITED STATES

Product

FACE AND COMMON BRICK also DOUBLE COMMONS.
STANDARD SIZE, 4x5x12-IN. and 5x8x12-IN. HOLLOW WARE.
SIDEWALK and TERRACE BRICK.

Composition and Manufacture of Wyandot Brick

An all-clay, genuinely sand molded brick, made from yellow clay which burns red. Variety and color flashing obtained by the location of brick in the kilns. Brick is burned to the fusion point of the clay. Made by the same process as the handmade brick of years ago, but by machinery. Old-fashioned box molds lined with sand are used. This sand is part of the surface of brick, burned in and cannot rub off.

Ranges—*Old Colony*—varying shades of red, brown and gun-metal.

Sarouk—rose pink, bronze with rose hearts, lavender-blue.

Burgundy—deep wine red, plain and with purple-blue flashings.

Moss Rose—all one-color pink, with occasional very slight kiln flashing.

Sun-Tan—all one-color brownish red.

Wyandot Red—all one-color red, no flashing.
Elm—greenish-tan, tan and tan with pink flashing.
Russet—light red and brown—deeper red flashing.
Buckskin—creamy white, shell pink, green, cream with pink flashing.

Kingswood—all one-color cream.

Antique—slightly distorted brick in darker tones of all the above colors.

Commons—*Hard Line*—Not selected for color—vitrified—suitable for all outside purposes.

Backups—suitable for inside work only.

Contour and Texture—A slight irregularity of contour relieves it of any mechanical exactness. It has a soft, velvety exterior over a flinty interior—mortar adheres readily to surface.

Moisture Absorption—Tests from 1% to 8%.

Special Shapes—45° octagons, water tables, headers, stretchers, inside and outside returns, carried in stock. Any type of special shape made from architects' blue prints.

Shipping Facilities

Factory is located on the Hocking Valley R. R. and the main line of the Pennsylvania.



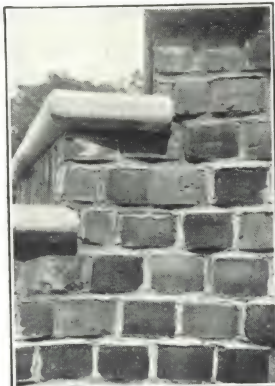
Masonic Home, Utica, N. Y.
KINNE & FRANK, Architects



Novitiate, Notre Dame University, South Bend, Ind.
MAGINNIS & WALSH, Architects



Auditorium, Glencoe High School,
Chicago, Ill.
J. ARCHIBALD ARMSTRONG, Architect



Detail Wyandot Sand Molded
Brickwork
RINDGE & RINDGE, Architects



Residence, Ann Arbor, Mich.
FRANTZ & SPENCE & ALDEN DOW, Architects



Cranbrook School for Boys, Birmingham, Mich.
ELIEL SAARINEN, Architect



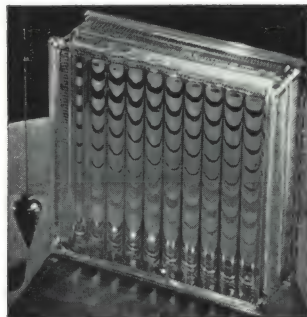
Kingswood School for Girls, Birmingham, Mich.
ELIEL SAARINEN, Architect

CORNING GLASS WORKS

ARCHITECTURAL DIVISION
FACTORY AND GENERAL OFFICE
CORNING, N. Y.

SALES OFFICE AND DISPLAY ROOMS: 748 Fifth Ave., NEW YORK, N. Y.
SALES REPRESENTATIVES IN MOST PRINCIPAL CITIES

"PYREX" GLASS CONSTRUCTION UNIT



"Pyrex" Glass Construction Unit
11 $\frac{3}{4}$ x 11 $\frac{3}{4}$ x 4 in. Weight: 13 lbs.
results in a unit construction which is readily adapted to the sizes of most building materials.

The CORNING GLASS WORKS, recognizing the demand by architects and designers for translucent walls, introduces a new glass construction unit to the building field.

Size

The size, 11 $\frac{3}{4}$ x 11 $\frac{3}{4}$ x 4 in., considerably lessens the cost of installation, produces a design which emphasizes the special qualities of glass, reduces the number of mortar joints, thus increasing the light transmission of the wall. This size, plus a $\frac{1}{4}$ in. mortar joint, results in a unit construction which is readily adapted to the sizes of most building materials.

Glass

These units are made from one of the "Pyrex" Brand Heat Resistant Glasses, which has a coefficient of expansion under .000050 for each degree of temperature change between 19° and 350° C. This quality makes them ideal for use on the exterior of buildings where they will be subjected to severe and sudden temperature changes. This characteristic also adapts them for illuminating purposes where intense heat and cold may exist on opposite sides of the glass.

Strength

Each unit is capable of withstanding a direct load equivalent to the weight of a wall of these units, including mortar, seven hundred feet high. Even though building codes, at present, consider glass units as curtain wall material only and do not permit their use as bearing walls, the strength of this unit is more than sufficient for any conceivable installation.

Seal and Dead Air Space

The seal obtained by the adhesion of hot glass insures a hermetically sealed block, which prevents air from entering the block. This feature eliminates the possibility of non-dehydrated air entering the block and the formation of condensation on the inside of the unit during cold weather.

This glass-sealed dehydrated air chamber creates a unit with an exceptionally high insulating value. Of course there will

be no infiltration loss of heat through a wall of these units.

Fluting

Scientifically designed fluting on the interior faces of the unit produces a high diffusion of light, obscures images, creates an ever-changing decorative pattern and eliminates the possibility of undesirable lens effect. The smooth outside surfaces reduce the cleaning problem to a minimum.

Cementing Material

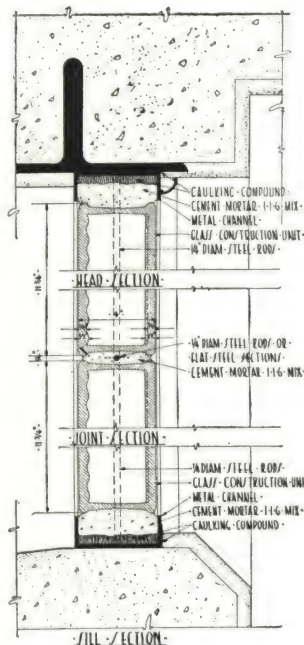
These units are set up with a lime Portland Cement mortar. A mix of one part lime, one part cement and six parts sand is recommended. When the unit is used in exterior walls, this mixture should be waterproofed by the addition of ammonium or calcium stearates, or some other recognized waterproofing compound. The mortar should be mixed as dry as possible for good workability, since glass is impervious to moisture as contrasted with ordinary masonry. The joint surfaces of the unit are corrugated to insure a perfect bond between the glass and the mortar.

Re-enforcing

For large areas of glass construction units, we recommend the use of steel re-enforcing, either $\frac{1}{8}$ in. pencil rods, $\frac{3}{4}$ in. round rods, or $\frac{1}{2}$ x 1 $\frac{1}{2}$ in. flat bars. These may be located every course, every other course, or even farther apart, depending on the size of the panel. It is suggested that the architect or builder consult a representative of the CORNING GLASS WORKS for details on this point.

Replacement

Should one of these units break, it is as easily replaced as a ceramic or masonry block.



Uses

The uses for the "Pyrex" Glass construction unit are unlimited depending upon the imagination of the designer. In the short time that this unit has been on the market, installations have been made in private residences, in conjunction with air conditioning, as interior and exterior walls for offices, decorative wall treatment, bars, and shop fronts. It is recommended for use as exterior walls in dark courts, hospital partitions, in bathrooms and kitchens as skylight units, and for installation in locations where light but not visibility is desired.

"Pyrex" is a registered trademark of the Corning Glass Works.



Photo by Richard Garrison
Living Room, House of Morris B. Sanders, 219 East 49th Street, New York, N. Y.
MORRIS B. SANDERS, Architect

"Pyrex" Glass Construction Unit as an Exterior Wall



Photo by Drix Duryea
Bar, Belle Meuniere, 12 E. 52nd Street, New York, N. Y.

LOUIS AND ADELE REYNAL, Designers
"Pyrex" Glass Construction Unit, No. 2005A and Glass Cane as Bar Rail

More Complete Information Regarding This Type of Glass Masonry May Be Had on Request

OWENS-ILLINOIS

INSULUX

GLASS BLOCKS



TRANSLUCENT MASONRY

OF OWENS-ILLINOIS

INSULUX

Glass Building Blocks



• The following pages tell the story of Glass Masonry—a product demanded by the functional and aesthetic requirements of present-day building. Owens-Illinois Glass Masonry Blocks combine properties that are available in no other one building material. The research and manufacturing facilities of the Owens-

Illinois Glass Company have made possible the economical production of Glass Masonry Blocks distinguished by low heat conductivity, great structural strength and desirable light transmitting and diffusing properties.

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Structural Strength	five
Resistance to Heat Loss	five
Sound Deadening	six
Fire Resistance	six
Moisture Penetration	six

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Removal and Replacement	six
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Basic Specifications	sixteen
Scientific Test Data	sixteen
Cost of Insulux Masonry	sixteen

OWENS-ILLINOIS GLASS COMPANY • GLASS BLOCK DIVISION • MUNCIE, INDIANA

GENERAL DESCRIPTION OF INSULUX GLASS MASONRY



Insulux Glass Blocks are light in weight and are of a size that is convenient for the mason to handle. They lay up quickly in the same manner as other masonry units.

Owens-Illinois Glass Blocks are hollow, partially evacuated, translucent units of water-clear glass. They are laid up by masons using ordinary mortar joints. They are suitable for functional uses as light-transmitting walls of high thermal resistance; they offer a wide range of decorative possibilities. Insulux Glass Blocks possess properties and advantages unique in the field of building materials.

ECONOMY—Exclusive manufacturing developments make Insulux Translucent Masonry lower in cost than other glass masonry construction, and compare with the cost of walls and average quality glazed steel sash.

LIGHT TRANSMISSION—Variations in the prismatic patterns impressed upon the faces of the blocks result in light-transmitting values and diffusing properties over a wide range, with an absence of glare, affording light comparable to that from northerly exposed windows or skylights.

UNIFORMITY—Rigid inspection and the Owens-Illinois manufacturing process produce a block of unvarying characteristics.

STRENGTH—Insulux Glass Blocks have high compressive, lateral, impact and bond strength.

THERMAL RESISTANCE—Insulux Glass Blocks prevent infiltration losses, their heat conductivity is low, they reduce the effect of solar radiation.

SOUND TRANSMISSION—Glass Block walls possess a well-defined deadening effect against the transmission of sound.

FIRE RESISTANCE—Insulux Glass Masonry walls, due to their double faced construction and thickness, provide remarkable resistance to fire attack.

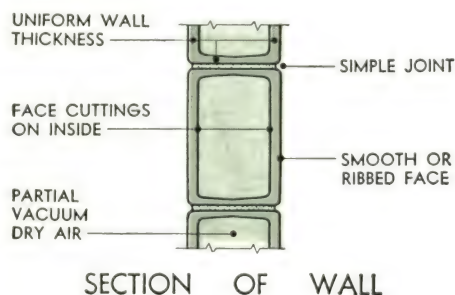
MOISTURE—The partial vacuum of dry rarefied air prevents condensation inside the blocks. In still air the outdoor temperature necessary to produce surface condensation on the inside of an Insulux Glass Masonry wall is minus 16.4°F. with an inside temperature of 70°F. and a relative humidity of 40%. (Purdue University test.)

CLEANLINESS—Insulux Glass Masonry walls are easy to clean and maintain. They are non-absorbent to liquids or odors.

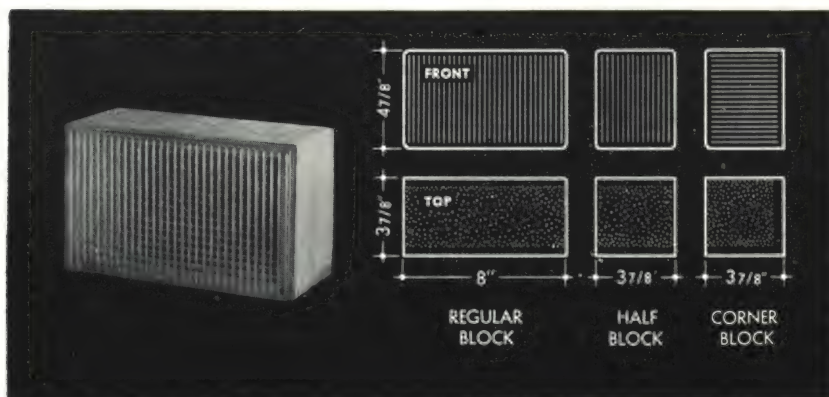
PRACTICALITY—Experience with glass blocks has established their practical value over a period of years.

REPLACEMENT—The simplicity of the mortar joint makes removal and replacement easy.

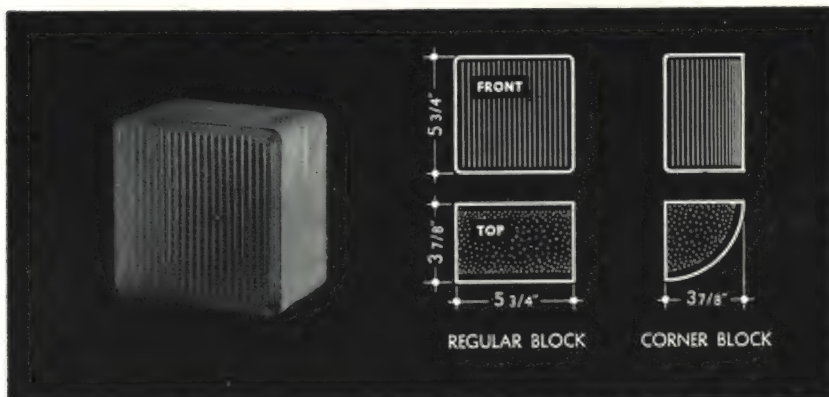
From these features and advantages, it can be easily seen that Insulux Glass Blocks possess characteristics not found in other types of masonry or in other glass building units.



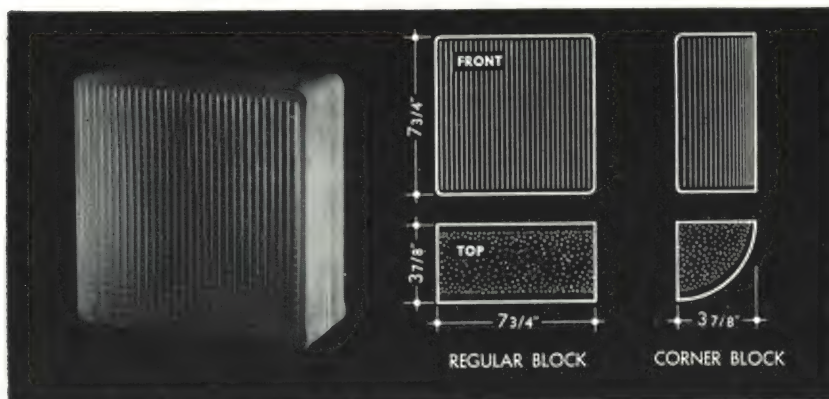
STANDARD SIZES



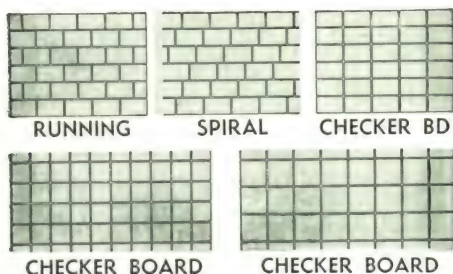
NO. 1 SERIES—This block bonds with 2 courses of ordinary brickwork. Square corner blocks and half blocks to be used in starting panels of Running Bond are standard. Owens-Illinois Glass Blocks are standard in 3 sizes. The use of standard sizes results in the most economical glass masonry construction now known to the building industry.



NO. 200 SERIES—This block is particularly suited to Checkerboard Bond. Rounded corner blocks are standard in this series. Beyond the standard sizes referred to, on special order we can furnish extra large sizes, such as 11 3/4 x 11 3/4 x 3 7/8 in., and larger oblong styles.



NO. 300 SERIES—The larger size square blocks are ideally suited to larger areas and to particular design requirements. Rounded corner blocks are standard in this series. Variation in the selection of the face cuttings, bond, joint pointing, color of mortar joints—combine to offer an almost unlimited range of decorative possibilities.



LIGHT TRANSMISSION AND DIFFUSION

All standard sizes of Insulux Glass Blocks are available in the 4 standard cuttings shown. The various face cuttings have been arrived at through extensive research to obtain an interesting decorative quality, combined with a variation in the light transmission coefficients. The design of the cuttings does not permit a lens effect, thus avoiding glare or a spotty concentration of light.

Owens-Illinois Insulux Glass Blocks are translucent—permitting the transmission of light while effectively obscuring images. The prismatic cuttings create a pattern which serves as a screen, improves the quality of the light transmitted, eliminates the glare

STANDARD CUTTINGS

and increases the decorative appeal of the product by giving it a definite texture when laid up to form a glass masonry wall.

Each face cutting is designated by number. This number, when added to the series number, identifies the block both for size and cutting design. For instance, the 4 $\frac{7}{8}$ x 8 in. block (series No. 1) with the face cutting pattern No. 11, would be identified as block No. 1-11. The 5 $\frac{3}{4}$ x 5 $\frac{3}{4}$ in. block (series No. 200) with face cutting pattern No. 11, would be identified as block No. 200-11.

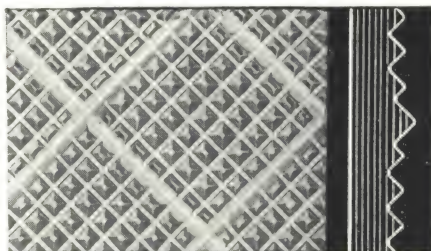
LIGHT TRANSMISSION—Where the intensity of light to be admitted is the factor to be considered in the selection of glass blocks, a variety of face cuttings is offered. A choice can be made according to the light transmission percentages—making interior lighting controllable. The various face cuttings offer a wide range of transmission coefficients. Thus, too brilliant light can be controlled by the choice of a block having a suitably low transmission factor. Where all the light possible is required for interior vision, a wall built of blocks with Cutting No. 11 transmits 86.5% of the incident light. This value is comparable to the transmission value of ordinary windows which have an average coefficient of from 85% to 95%. The exterior faces of the blocks are either smooth or have simple ribs—to minimize the accumulation of surface dirt and to make its removal easy. This is important since the efficiency of any glass as a light-transmitting medium is seriously impaired by surface dirt.

LIGHT DIFFUSION—The light transmitted by Insulux Masonry is diffused perfectly. It is glareless and is comparable to the light from a northerly exposed window or skylight. The elimination of glare and shadows promotes efficiency, comfort and quality of workmanship. This light is particularly desirable for close work. Professor George Sherman of the Physics Department of Purdue University says, as a result of his tests, "When any of the cross-rib or pyramid-face blocks are held six inches from an intense light such as a high-power concentrated-filament lamp, no glare is observed when the block is viewed at any angle. In the single-rib blocks (No. 11 Cutting) only a very small glare is found under this very severe test. All blocks tested showed an excellent diffusion." An ever-changing decorative effect is produced by the play of light as the angle of vision changes.

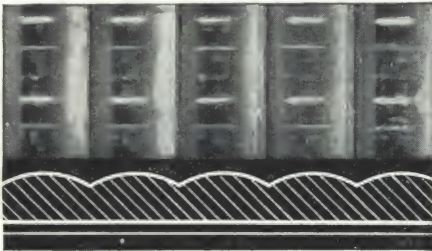
STANDARD CUTTINGS—There are 4 standard cuttings. Cutting No. 11 consists of vertical ribs which are impressed upon the exterior faces of the block. The design of Cutting No. 1 consists of horizontal ribs on the inside of the 2 faces of the block and vertical ribs on the outside of the 2 faces of the block. Cutting No. 4 consists of very fine pyramidal prisms pressed onto the inside of the 2 faces of the block, the exterior being smooth. Slightly larger pyramidal prisms are pressed upon the inside of the 2 faces of the block to form Cutting No. 5, the exterior being smooth.

SPECIAL STANDARDS—A number of additional face cuttings are available at no increase in cost. These are designated as "Special Standards," of which the illustrations are representative. They are not regularly stocked in local warehouses but prompt shipment can be obtained from the factory at Muncie, Indiana. These Special Standard designs offer a further range of light transmission values and decorative possibilities. No. 7 Cutting has large vertical ribs on the inside of both faces, exterior faces smooth. Cutting No. 10 has small ribs vertically on one exterior face and horizontally on the other exterior face, the two interior faces being smooth. Cutting No. 2 has large ribs running on both faces. Cutting No. 3 is similar to Standard Cutting No. 4, except that a diamond pattern is created by small arrises running diagonally and at right angles to each other.

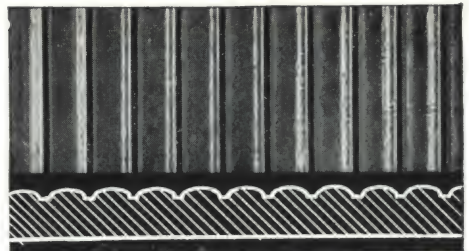
SPECIAL BLOCKS—The Owens-Illinois Glass Company will be pleased to consult with interested persons in the creation of glass masonry blocks for special conditions. Special face cuttings, colored blocks and blocks of special sizes can be produced. Information will be gladly furnished upon request.



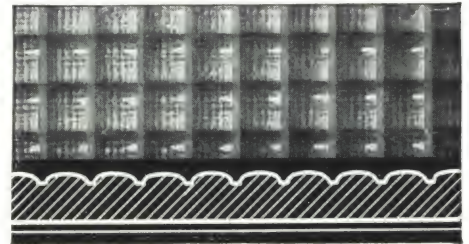
CUTTING NO. 3. Transmits 27.6% of the light falling upon it. 3.6 sq. ft. of this block are equivalent to 1 sq. ft. of ordinary window.



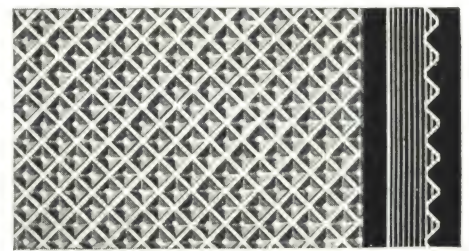
CUTTING NO. 2. Transmits 73.4% of the light falling upon it. 1.35 sq. ft. of this block are equivalent to 1 sq. ft. of ordinary window.



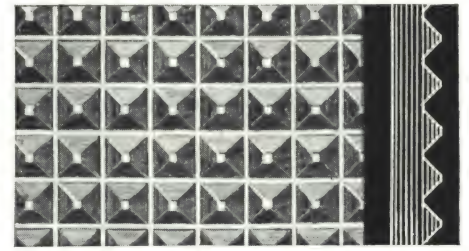
CUTTING NO. 11. Transmits 86.5% of the light falling upon it. 1.12 sq. ft. of this block are equivalent to 1 sq. ft. of ordinary window.



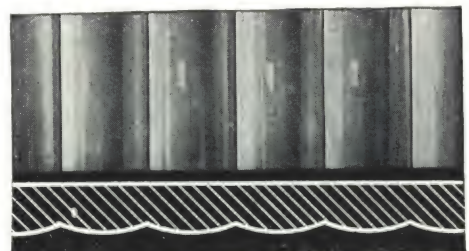
CUTTING NO. 1. Transmits 78.5% of the light falling upon it. 1.3 sq. ft. of this block are equivalent to 1 sq. ft. of ordinary window.



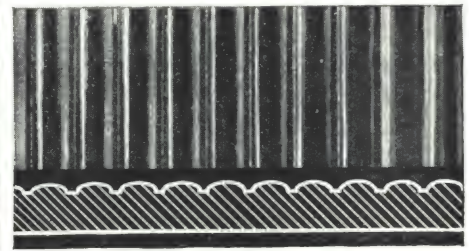
CUTTING NO. 4. Transmits 27.6% of the light falling upon it. 3.6 sq. ft. of this block are the equivalent of 1 sq. ft. of ordinary window.



CUTTING NO. 5. Transmits 11.7% of the light falling upon it. 8.5 sq. ft. of this block are equivalent to 1 sq. ft. of ordinary window.



CUTTING NO. 7. Transmits 84.5% of the light falling upon it. 1.19 sq. ft. of this block are equivalent to 1 sq. ft. of ordinary window.



CUTTING NO. 10. Transmits 78.5% of the light falling upon it. 1.30 sq. ft. of this block are equivalent to 1 sq. ft. of ordinary window.

• STRUCTURAL STRENGTH • RESISTANCE TO HEAT LOSS

Owens-Illinois Glass Blocks are a pressed glass product which results in absolutely uniform wall thickness impossible to obtain by the blown process. The uniform wall thickness makes it possible to thoroughly anneal the blocks, thereby developing to the highest degree the natural mechanical strength of the material.

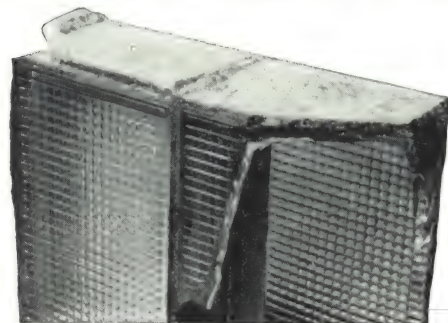
COMPRESSIVE STRENGTH—Insulux Glass Blocks are not now offered as a load-bearing material, yet they possess ample compressive strength to be self-supporting within the limits prescribed by the ratio of their thickness to any practical height. The average ultimate strength developed by this material in tests is 800 pounds per square inch with the standard ASTM cap. A safe working load for Insulux Glass Masonry erected in accordance with the specifications appearing on page 16 of this catalog, using a safety factor of 4, is 200 pounds per square inch.

LATERAL STRENGTH—Tests show that a panel 10 ft.-0 in. x 15 ft.-0 in. would withstand a 90 to 100 mile gale. Therefore, it will withstand the usual 20 pounds per square foot wind pressure allowance, with a safety factor of four.

IMPACT STRENGTH—The thickness of the shell wall of the block and its design make it withstand normal wall impact without failure.

MORTAR BOND STRENGTH—The standard requirement for mortar bond in brickwork is 13.8 pounds per square inch in tension. Tests on Insulux Glass Masonry show an average of 27.2 pounds per square inch. Similarly, they have proved equal in shear to many other masonry materials.

THERMAL EXPANSION—The expansion and contraction of Insulux Glass Blocks under temperature changes correspond closely with those of mortar in conjunction with which they are used.



• The photograph illustrates the bond of the mortar and the special gritty surface coating with which the 4 mortar-bearing surfaces of the glass block are treated. This coating is water, alkali and acid resisting, insuring a high degree of bond between the mortar and the glass, and eliminating the likelihood of moisture penetration between the mortar joints and the blocks themselves.

The Building Code Committee of the Dept. of Commerce recommends the following working stresses in compression in lbs. per sq. in. They are presented here for comparison with Insulux Glass Masonry:

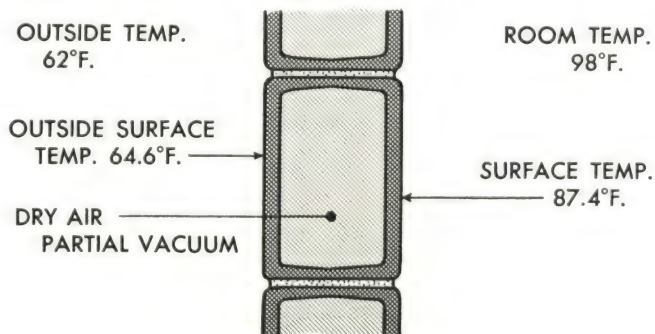
P. C. Concrete, 1:3:5.....	400
Brickwork, Lime and P.C. Mortar.....	130
Hollow Tile Blocks.....	80
Hollow Concrete Blocks.....	80
Rubble Stonework, P.C. Mortar.....	140
Insulux Translucent Masonry	200

The high resistance of Insulux Glass Masonry to heat loss by conduction or infiltration reduces the cost of air conditioning and artificial heating. It offers protection against penetration of solar heat. In the manufacturing process, the air in the hollow glass block is trapped at a very high temperature. When the block is cooled it contains only thoroughly dry air under partial vacuum, the rarefied dead air trapped in small volume forming an excellent heat insulator. Tests show Insulux Glass Block to be one of the best insulators among building materials, and unique when its light-transmitting properties are also considered.

CONDUCTION—Average coefficients of heat transmission in Btu's per hour per square foot per F° difference in temperature are based on a wind velocity of 15 mph. Coefficients for masonry walls marked * are furred and have ¾ in. plaster on metal lath.

3⅞ in. Insulux Glass Masonry Wall.....	0.29
Single glazed window	1.13
Single glazed skylight	1.13
8 in. solid brick wall*.....	0.32
12 in. solid brick wall*.....	0.25
16 in. solid brick wall.....	0.25
Stuccoed 8 in. hollow tile wall*.....	0.27
Stuccoed 12 in. hollow tile wall*.....	0.22
16 in. concrete wall*.....	0.31
12 in. concrete wall*.....	0.32
4 in. hollow gypsum, plastered both sides....	0.27
4 in. hollow clay tile, plastered both sides....	0.40
2 in. solid plaster.....	0.53

INFILTRATION—Air infiltration through cracks around windows represents a considerable heat loss either in air conditioning or heating. Insulux Translucent Masonry used to admit light, because of the depth of its solid mortar joint, reduces this loss to a minimum. If openings must be used for natural ventilation, they can be much smaller in area and periphery.



SOLAR RADIATION—It has been found that Insulux Translucent Masonry reduces the temperature due to direct sunlight of an enclosed space 25% to 40% as compared with an equal area of single glazed steel sash for the midday period of 4 hours. This is of paramount importance in relation to comfort and air conditioning.

A daylight view of the Owens-Illinois Building at the Century of Progress Exposition. Architect, Eloy Ruiz. This building was erected as an Exposition novelty, but nevertheless marked a definite phase in the development of glass masonry. Insulux Glass Blocks have been materially improved since this structure was built.



SOUND DEADENING—Minute vibrations are set up in partitions consisting of single thin sections of wood, glass or metal by the alternating pressure of the incident sound. The amount of transmission depends upon the mass or stiffness of the partition. Partitions constructed of Insulux Glass Masonry possess rigidity and thickness, making them effective in deadening the transmission of sound.

FIRE RESISTANCE—In order to form an effective fire stop to fires of the usual duration and intensity, it is necessary to prevent the passage of flame through any material. Incidental crazing and cracking, however severe, does not destroy the value of the material as a fire stop. The cooling and impact of fire streams may cause cracks and crazing but do not result in failure of the Insulux Glass Masonry wall under conditions encountered with proper fire protection.

MOISTURE PENETRATION—Moisture can penetrate an Insulux Glass Masonry wall only through the mortar joints which, with the mortars specified, is practically impossible. Neither under test nor in actual use has condensation collected on the inside surface of an Insulux Glass Masonry wall within practical ranges of temperature, humidity and air motion.

CLEANLINESS AND MAINTENANCE—Insulux Glass Masonry has the high sanitary property that is inherent in glass. The surface of glass is non-porous which prevents the passage of air and gases and will not absorb odors, water or grease. Several of the face cutting designs of Insulux Glass Blocks have smooth exterior faces, the prismatic cutting being impressed upon the interior of the faces of the block. In other



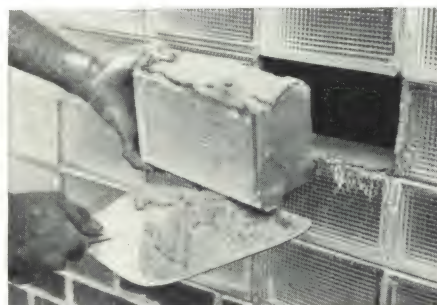
The lighting of this building made it as beautiful by night as by day. Built entirely of glass block, it withstood the extremely rigorous weather conditions of the Chicago lake front, attesting to the practicality of glass masonry construction.

designs the faces have simple, flat, rounded ribs on their exteriors. The simplicity of the surfaces thus obtained minimizes the accumulation of surface dirt and makes its removal easy. The use of glass masonry eliminates air infiltration which is often a path by which dirt and dust enter a building. The hard brilliant surface of glass blocks does not disintegrate and cannot be easily marked, written upon or defaced. The weather does not affect glass masonry, it does not oxidize; it requires no painting nor other interior finish.

REMOVAL AND REPLACEMENT—A damaged glass block can be removed easily from the wall by drilling holes in the mortar joint in opposite corners and then inserting a keyhole saw through the joint and sawing out the block. The new block is then buttered with mortar, inserted in place and the job completed by pointing.

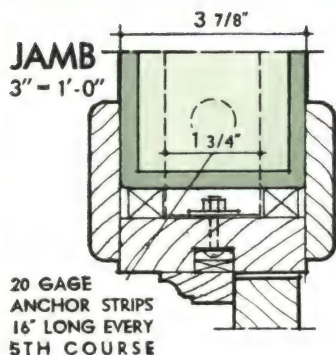
USES OF INSULUX MASONRY—Since Insulux Translucent Masonry admits diffused light of desirable character without allowing heat flow, it offers an economy in the construction of air-conditioned and artificially heated buildings obtainable in no other building material. The sanitary properties make glass masonry desirable for use in such buildings as hospitals, dairies, bakeries and breweries. The water-clear glass may be floodlighted to produce striking and easily varied decorative effects. The diffusion characteristics definitely indicate its use in public schools, shops, offices, or any place where close work is the daily routine and shadows are undesirable. An infinite number of applications will suggest themselves to designers and builders far beyond the scope of any tabulation that might be attempted.

European architects have long been familiar with glass block construction. This kaffeehaus by architect Bohuslav Fuchs illustrates a striking combination of its functional and decorative use.

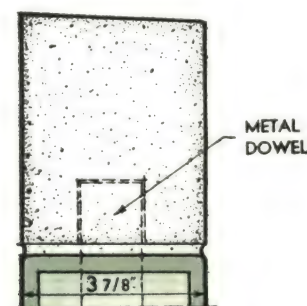


No special skill is required in removing and replacing glass blocks. The buttered block is easily replaced and pointing the joint completes the job.

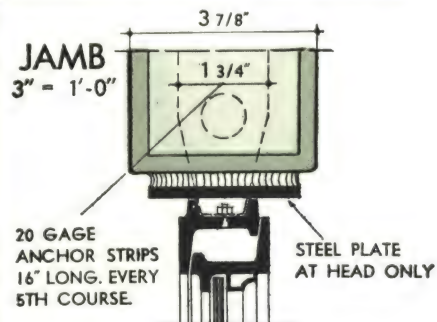
Below are shown various details for openings through Insulux Masonry walls. Doors, windows, louvers or other openings can be made as easily as with other types of masonry. Any type of frame or trim is easily installed. The frames for openings, with their anchors bent at 90°, should be put in place first and the glass masonry built to them. The size of frames for openings should be adjusted to the course heights of the blocks to be used since blocks cannot be chipped to fit uneven spaces. Different methods of anchoring large panels of translucent masonry to intermediate supports are illustrated.



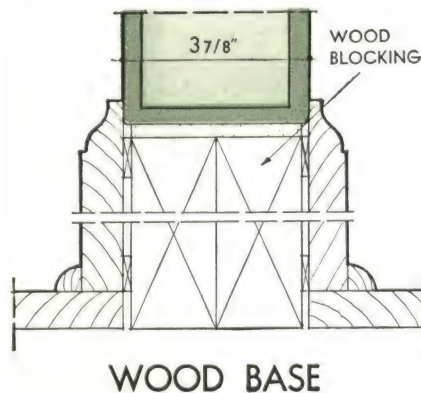
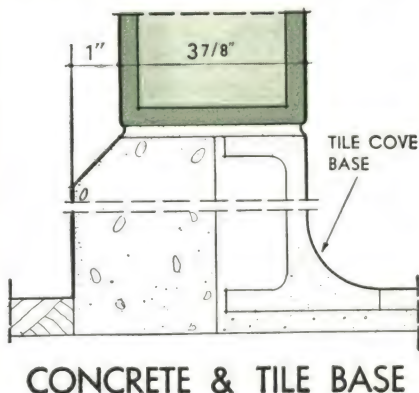
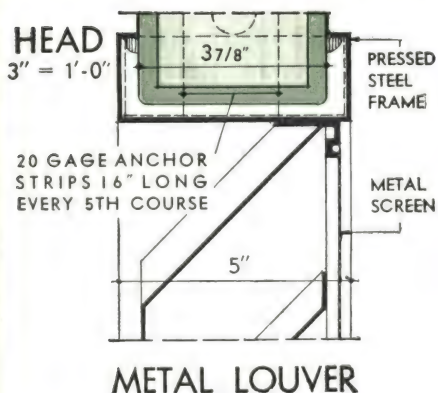
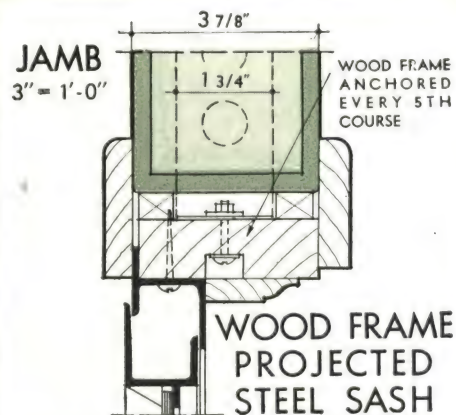
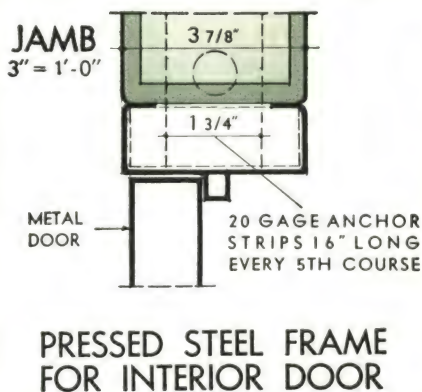
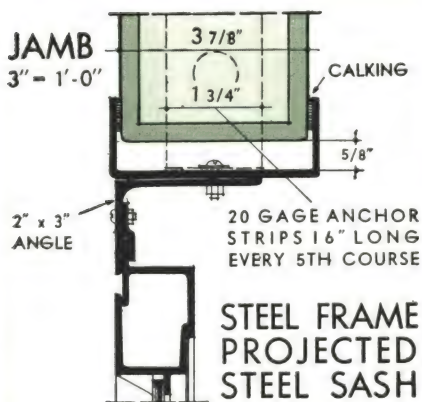
WOOD DOOR FRAME



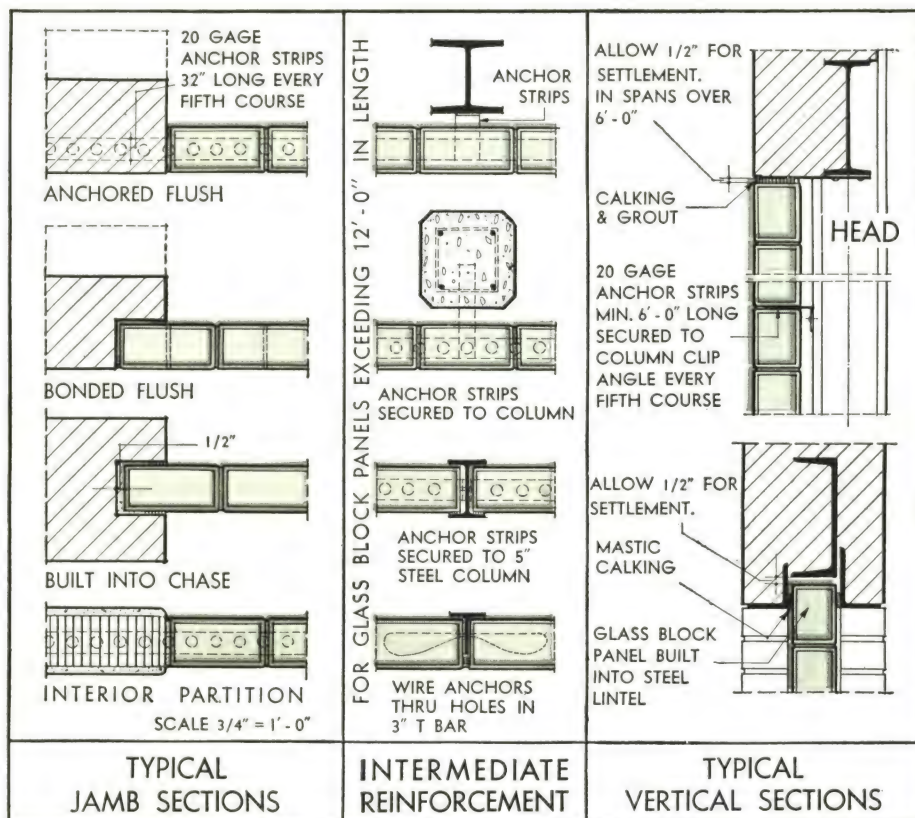
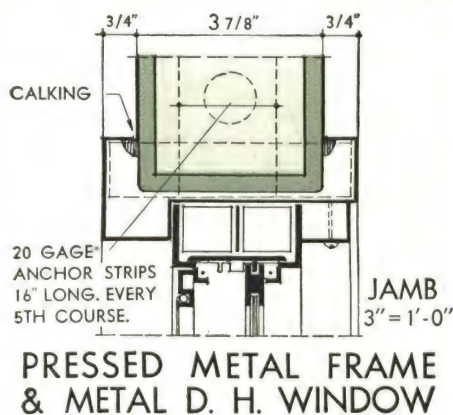
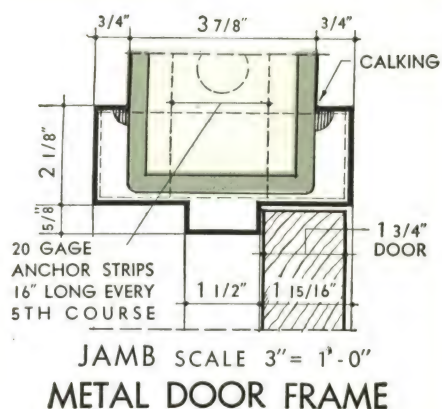
STONE COPING



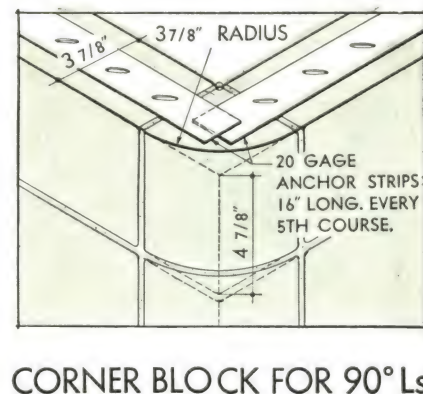
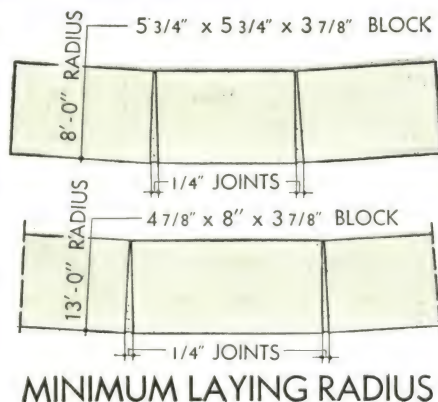
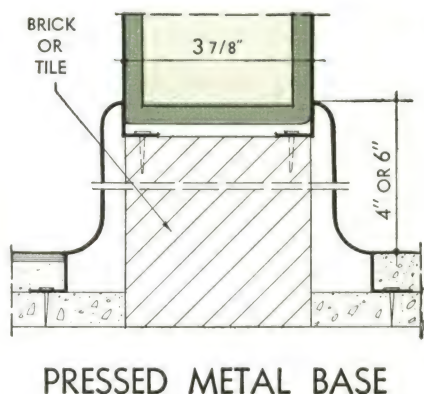
STEEL CASEMENT DOOR



TYPICAL DETAILS OF INSULUX CONSTRUCTION



REINFORCING & ANCHORING PANELS IN MASONRY WALLS

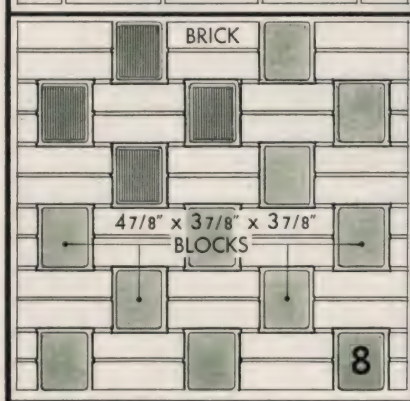
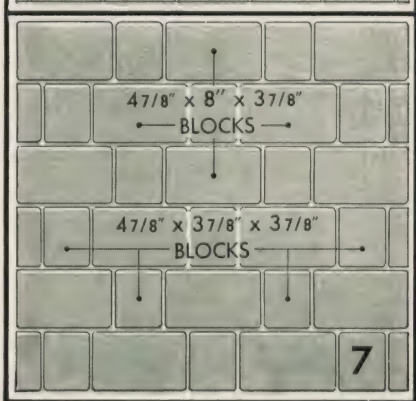
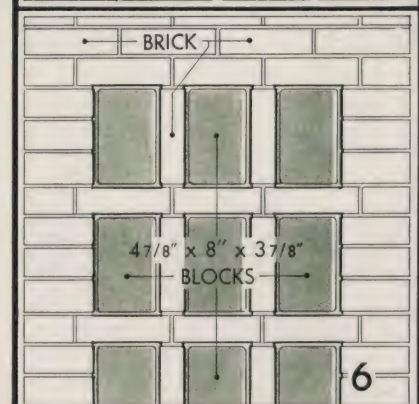
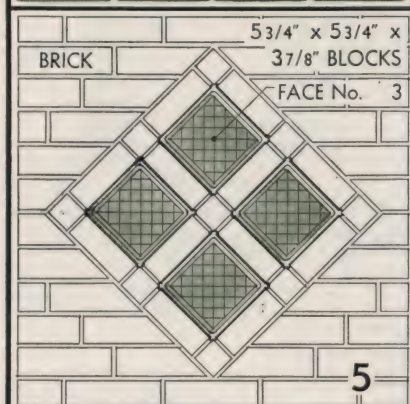
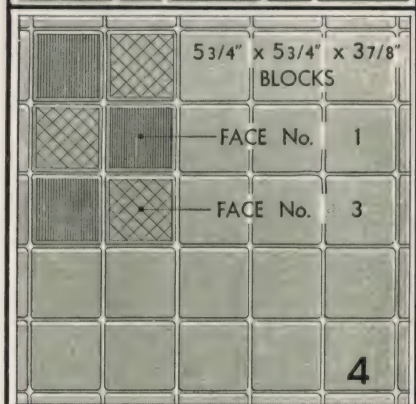
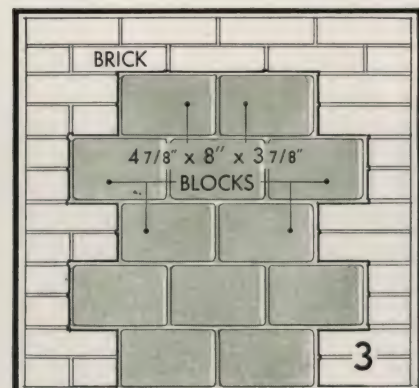
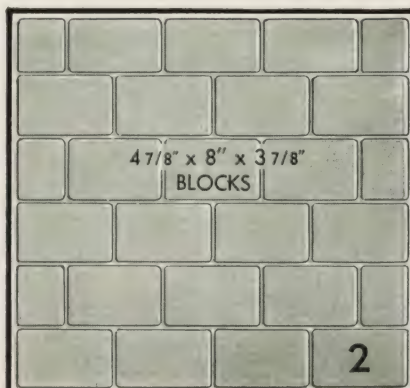
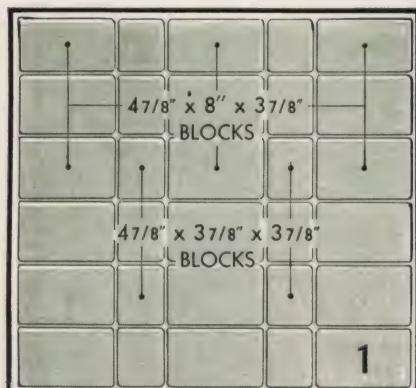


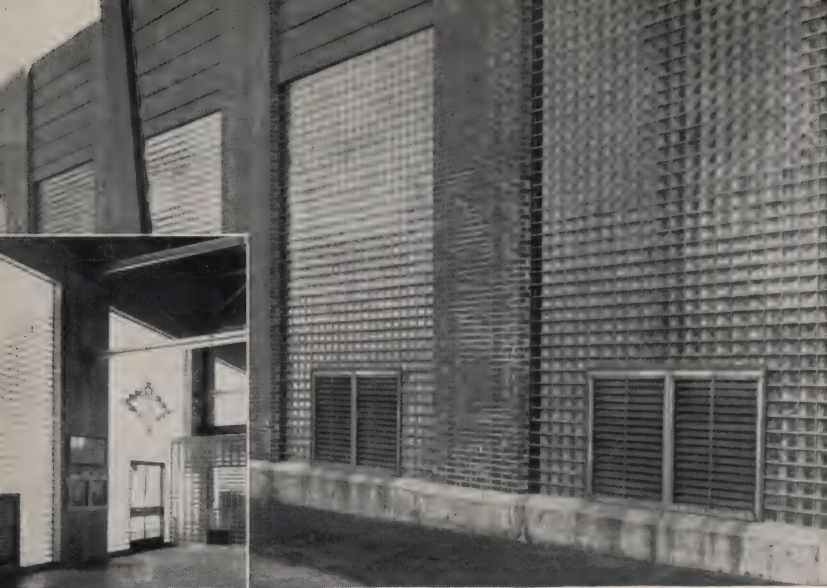
● Insulux Glass Blocks offer many possibilities for patterns, either used alone or combined with ordinary brickwork or other masonry. In Figure 1, the half block has been combined with the rectangular block. Figure 2 is ordinary Running Bond. Figure 3 shows the glass block bonded into a brick masonry wall by means of quoins. The Checker-board Bond shown in Figure 4 can be varied by the selection of different face cuttings. Figure 7 illustrates the use of the half blocks by means of which almost any brick bond pattern can be rendered in glass masonry. Figure 9 shows Spiral Bond which requires a chase at the jambs to cover the start of the pattern.

DIMENSIONS OF INSULUX GLASS MASONRY

Number of Units	47/8" x 8"				5 3/4" x 5 3/4"		7 3/4" x 7 3/4"	
	Height		Width		Height or Width		Height or Width	
	1/4" joints	3/16" joints	1/4" joints	3/16" joints	1/4" joints	3/16" joints	1/4" joints	3/16" joints
1	5 1/8"	5 1/16"	8 1/4"	8 3/16"	6"	5 15/16"	8"	7 15/16"
2	10 1/4"	10 1/8"	1' - 4 1/2"	1' - 4 3/8"	1' - 0"	11 7/8"	1' - 4"	1' - 3 7/8"
3	1' - 3 3/8"	1' - 3 3/16"	2' - 0 3/4"	2' - 0 9/16"	1' - 6"	1' - 5 13/16"	2' - 0"	1' - 11 13/16"
4	1' - 8 1/2"	1' - 8 1/4"	2' - 9"	2' - 8 3/4"	2' - 0"	1' - 11 3/4"	2' - 8"	2' - 7 3/4"
5	2' - 1 5/8"	2' - 1 5/16"	3' - 5 1/4"	3' - 4 15/16"	2' - 6"	2' - 5 11/16"	3' - 4"	3' - 3 11/16"
6	2' - 6 3/4"	2' - 6 3/8"	4' - 1 1/2"	4' - 1 1/8"	3' - 0"	2' - 11 5/8"	4' - 0"	3' - 11 5/8"
7	2' - 11 7/8"	2' - 11 7/16"	4' - 9 3/4"	4' - 9 5/16"	3' - 6"	3' - 5 9/16"	4' - 8"	4' - 7 9/16"
8	3' - 5"	3' - 4 1/2"	5' - 6"	5' - 5 1/2"	4' - 0"	3' - 11 1/2"	5' - 4"	5' - 3 1/2"
9	3' - 10 1/8"	3' - 9 9/16"	6' - 2 1/4"	6' - 1 11/16"	4' - 6"	4' - 5 7/16"	6' - 0"	5' - 11 7/16"
10	4' - 3 1/4"	4' - 2 5/8"	6' - 10 1/2"	6' - 9 7/8"	5' - 0"	4' - 11 3/8"	6' - 8"	6' - 7 3/8"
11	4' - 8 3/8"	4' - 7 11/16"	7' - 6 3/4"	7' - 6 1/16"	5' - 6"	5' - 5 5/16"	7' - 4"	7' - 3 5/16"
12	5' - 1 1/2"	5' - 0 3/4"	8' - 3"	8' - 2 1/4"	6' - 0"	5' - 11 1/4"	8' - 0"	7' - 11 1/4"
13	5' - 6 5/8"	5' - 5 13/16"	8' - 11 1/4"	8' - 10 7/16"	6' - 6"	6' - 5 3/16"	8' - 8"	8' - 7 3/16"
14	5' - 11 3/4"	5' - 10 7/8"	9' - 7 1/2"	9' - 6 5/8"	7' - 0"	6' - 11 1/8"	9' - 4"	9' - 3 1/8"
15	6' - 4 7/8"	6' - 3 15/16"	10' - 3 3/4"	10' - 2 13/16"	7' - 6"	7' - 5 1/16"	10' - 0"	9' - 11 1/16"
16	6' - 10"	6' - 9"	11' - 0"	10' - 11"	8' - 0"	7' - 11"	10' - 8"	10' - 7"
17	7' - 3 1/8"	7' - 2 1/16"	11' - 8 1/4"	11' - 7 3/16"	8' - 6"	8' - 4 15/16"	11' - 4"	11' - 2 15/16"
18	7' - 8 1/4"	7' - 7 1/8"	12' - 4 1/2"	12' - 3 3/8"	9' - 0"	8' - 10 7/8"	12' - 0"	11' - 10 7/8"
19	8' - 1 3/8"	8' - 0 3/16"	13' - 0 3/4"	12' - 11 9/16"	9' - 6"	9' - 4 13/16"	12' - 8"	12' - 6 13/16"
20	8' - 6 1/2"	8' - 5 1/4"	13' - 9"	13' - 7 3/4"	10' - 0"	9' - 10 3/4"	13' - 4"	13' - 2 3/4"
21	8' - 11 5/8"	8' - 10 5/16"	14' - 5 1/4"	14' - 3 15/16"	10' - 6"	10' - 4 11/16"	14' - 0"	13' - 10 11/16"
22	9' - 4 3/4"	9' - 3 3/8"	15' - 1 1/2"	15' - 0 1/8"	11' - 0"	10' - 10 5/8"	14' - 8"	14' - 6 5/8"
23	9' - 9 7/8"	9' - 8 7/16"	15' - 9 3/4"	15' - 8 5/16"	11' - 6"	11' - 4 9/16"	15' - 4"	15' - 2 9/16"
24	10' - 3"	10' - 1 1/2"	16' - 6"	16' - 4 1/2"	12' - 0"	11' - 10 1/2"	16' - 0"	15' - 10 1/2"
25	10' - 8 1/8"	10' - 6 9/16"	17' - 2 1/4"	17' - 0 11/16"	12' - 6"	12' - 4 7/16"	16' - 8"	16' - 6 7/16"
26	11' - 1 1/4"	10' - 11 5/8"	17' - 10 1/2"	17' - 8 7/8"	13' - 0"	12' - 10 3/8"	17' - 4"	17' - 2 3/8"
27	11' - 6 3/8"	11' - 4 11/16"	18' - 6 3/4"	18' - 5 1/16"	13' - 6"	13' - 4 5/16"	18' - 0"	17' - 10 5/16"
28	11' - 11 1/2"	11' - 9 3/4"	19' - 3"	19' - 1 1/4"	14' - 0"	13' - 10 1/4"	18' - 8"	18' - 6 1/4"
29	12' - 4 5/8"	12' - 2 13/16"	19' - 11 1/4"	19' - 9 7/16"	14' - 6"	14' - 4 3/16"	19' - 4"	19' - 2 3/16"
30	12' - 9 3/4"	12' - 7 7/8"	20' - 7 1/2"	20' - 5 5/8"	15' - 0"	14' - 10 1/8"	20' - 0"	19' - 10 1/8"
31	13' - 2 7/8"	13' - 0 15/16"	21' - 3 3/4"	21' - 1 13/16"	15' - 6"	15' - 4 1/16"	20' - 8"	20' - 6 1/16"
32	13' - 8"	13' - 6"	22' - 0"	21' - 10"	16' - 0"	15' - 10"	21' - 4"	21' - 2"
33	14' - 1 1/8"	13' - 11 1/16"	22' - 8 1/4"	22' - 6 3/16"	16' - 6"	16' - 3 15/16"	22' - 0"	21' - 9 15/16"
34	14' - 6 1/4"	14' - 4 1/8"	23' - 4 1/2"	23' - 2 3/8"	17' - 0"	16' - 9 7/8"	22' - 8"	22' - 5 7/8"

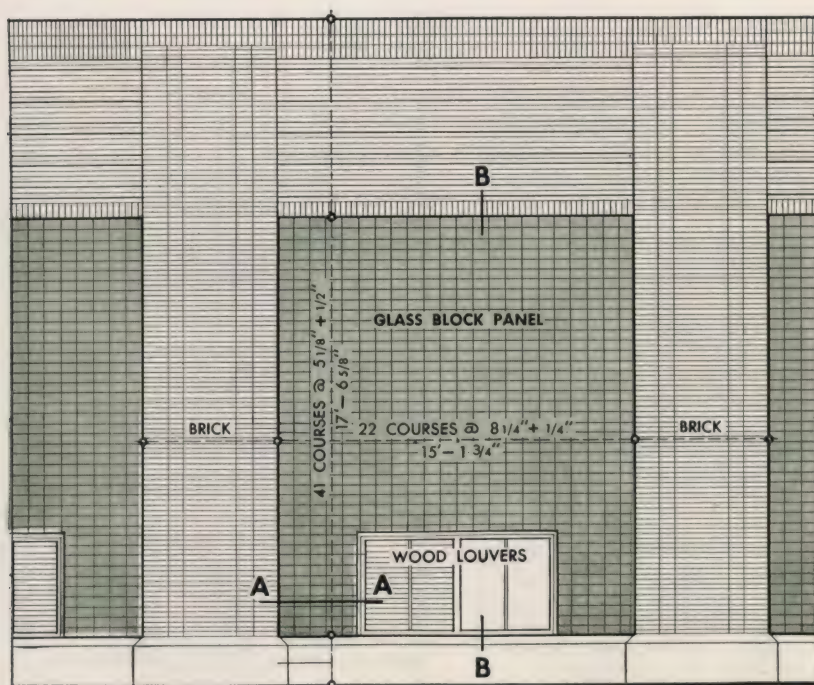
GLASS MASONRY BOND PATTERNS





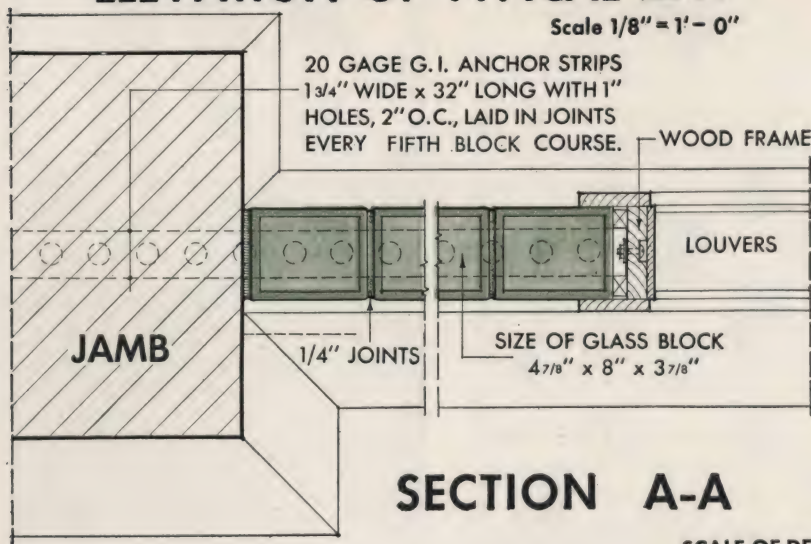
MODERNIZATION OF INDUSTRIAL BUILDINGS

- The obsolescence of industrial buildings is in many cases no less than that of the machinery and equipment which they house. With the increase in efficiency brought by modern air-conditioning methods, the heat loss of large windows becomes a critical item of expense. The use of Insulux Translucent Masonry provides perfectly diffused lighting and reduces the cost of heating during the cold months and air conditioning during the summer.

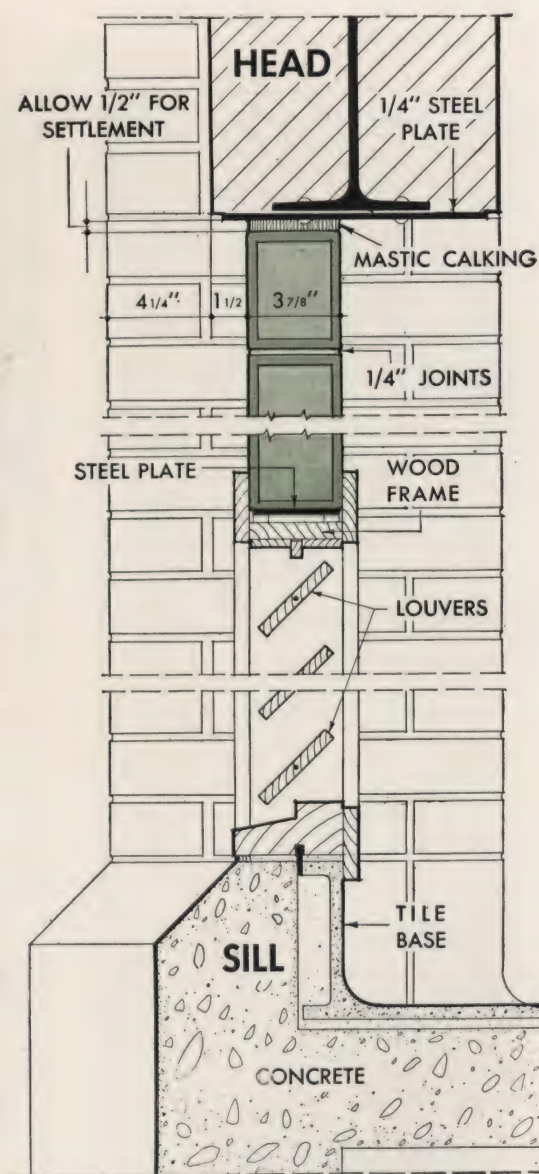


ELEVATION OF TYPICAL BAY

Scale $1/8'' = 1' - 0''$



SECTION A-A

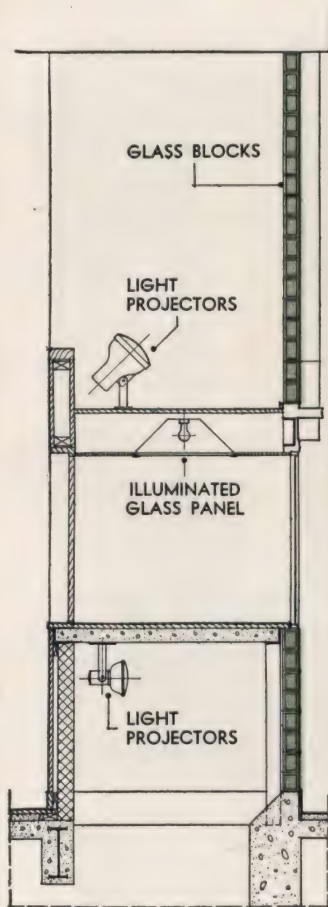


SECTION B-B

SCALE OF DETAILS: $1 1/2'' = 1' - 0''$

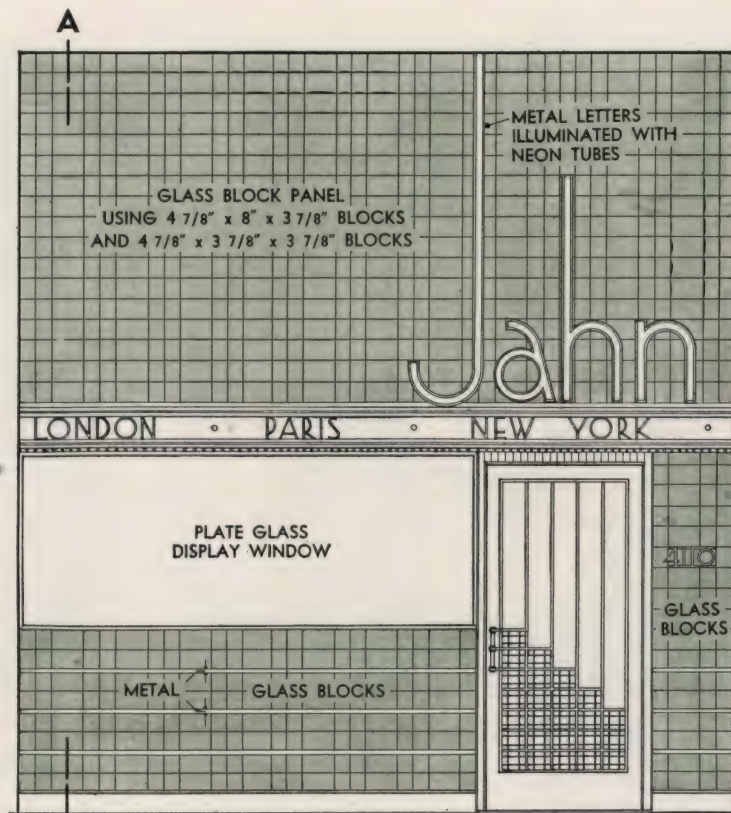
STORE FRONT DESIGN IN INSULUX BLOCK

- In the design shown on this page, advantage has been taken of both the functional and the decorative properties of the material. The glass bulkhead and spandrel admit light into the building during the daylight hours, or can be floodlighted from the inside to increase the "eye appeal" of the front. Colored floodlighting at night turns the store front into a compelling advertisement. The use of water-clear blocks permits great flexibility in the color scheme. A simple change in the lamps or screens used in the artificial lighting results in an entirely new effect whenever desired.



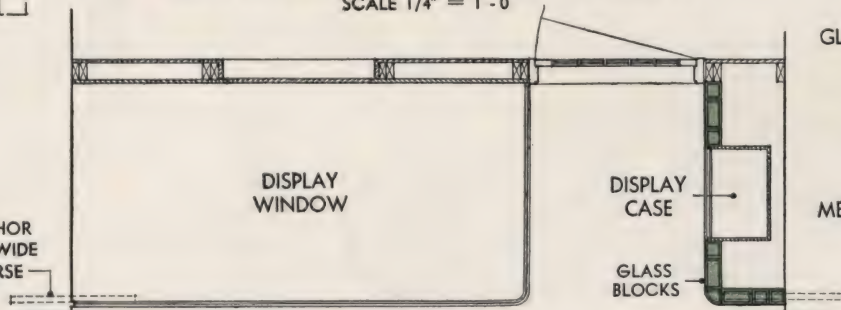
SECTION
SCALE 1/4" = 1'-0"

20 GAGE ANCHOR
STRIPS — 1 3/4" WIDE
EVERY 5th COURSE

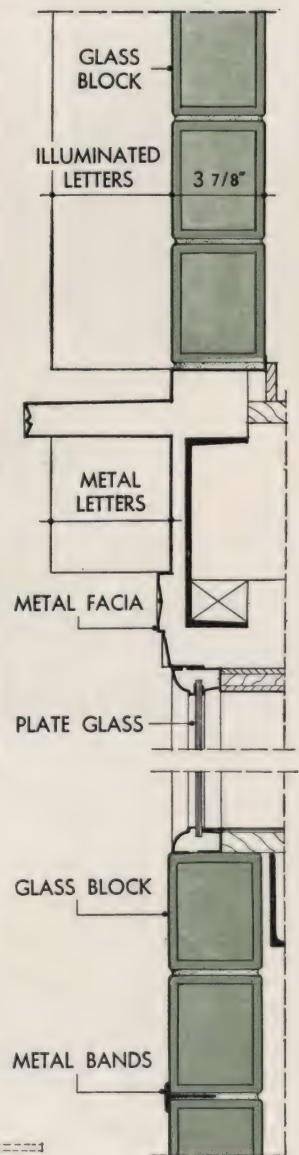


ELEVATION OF SHOP FRONT

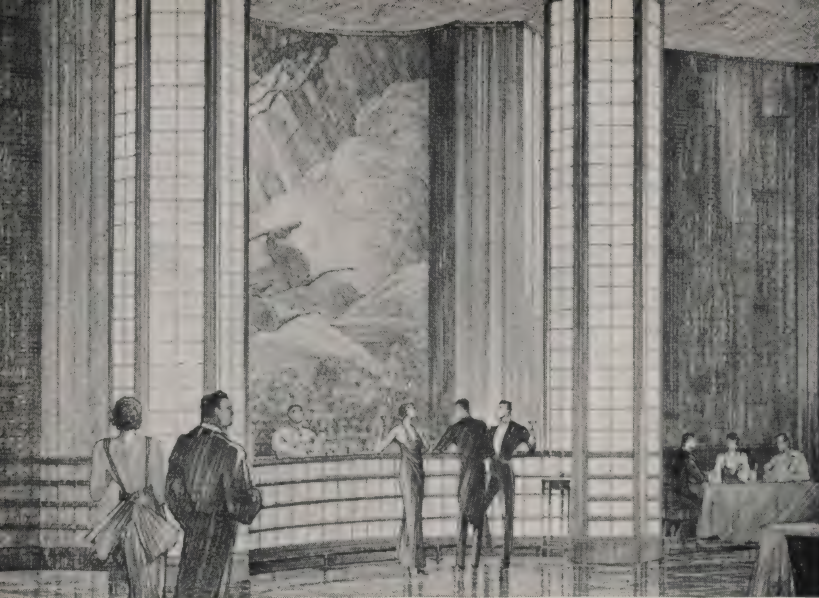
SCALE 1/4" = 1'-0"



PLAN
SCALE 1/4" = 1'-0"

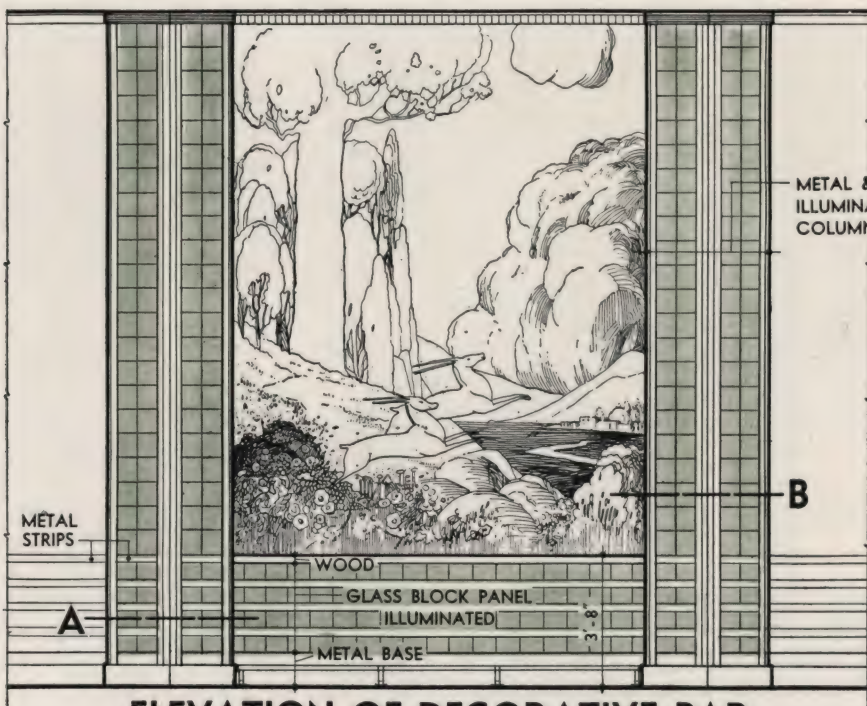


SECTION A-A
SCALE 1 1/2" = 1'-0"

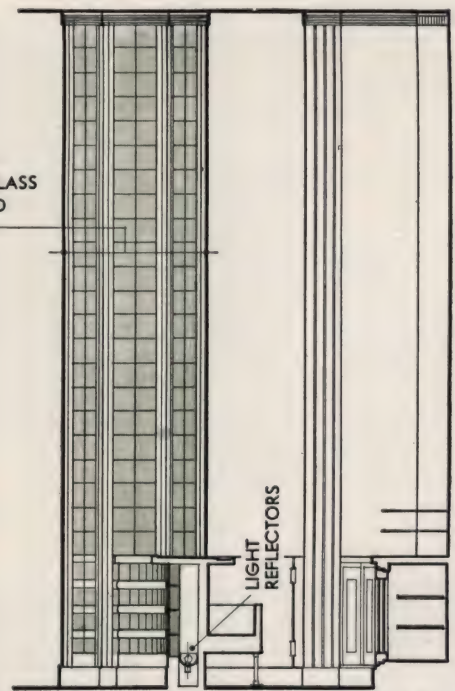


INSULUX BLOCK FOR MODERN INTERIORS

The imagination of the creative designer is allowed full play with Insulux Translucent Masonry. The sparkling surface and the possibility of striking color effects by means of artificial lighting mark a new step in the development of the modern architectural treatment of interiors. Reference to the plan of the columns suggests one method of lighting. The encasing around the structural column is painted white to reflect the light and create an even tone of illumination. The metal corners containing the strip lighting are removable for the replacement of lamps. The glass face of the bar is lighted by a series of small reflectors, as shown in the section.

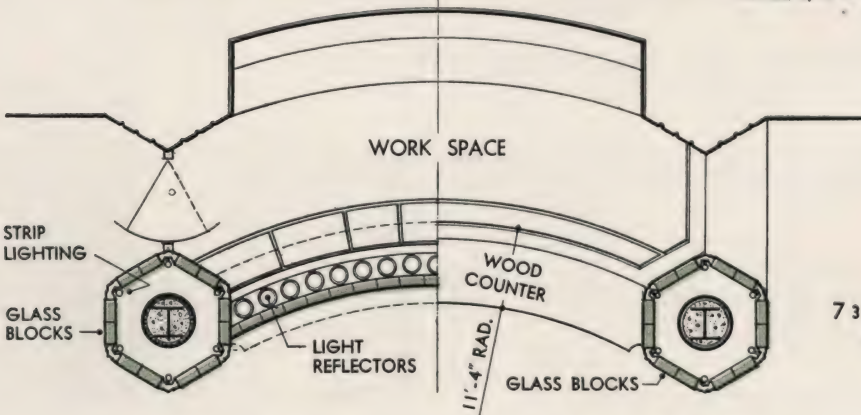


ELEVATION OF DECORATIVE BAR



SECTION ON CENTER LINE

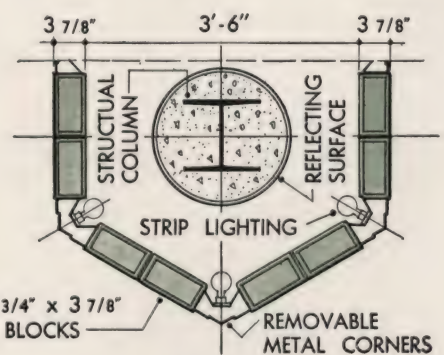
SCALE 3/16" = 1' - 0"



PLAN AT A

PLAN AT B

SCALE 3/16" = 1' - 0"

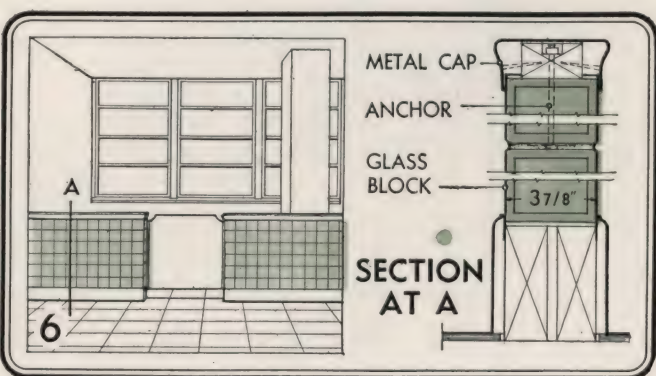
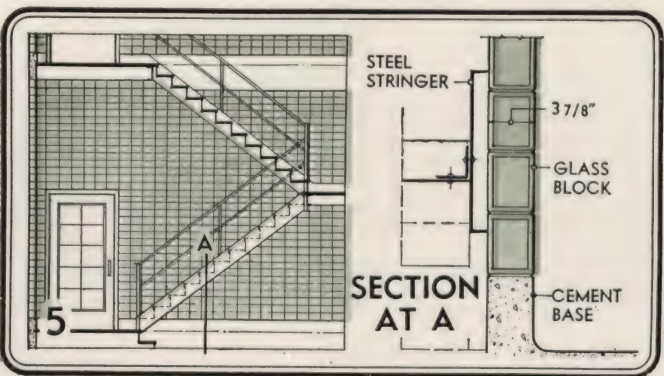
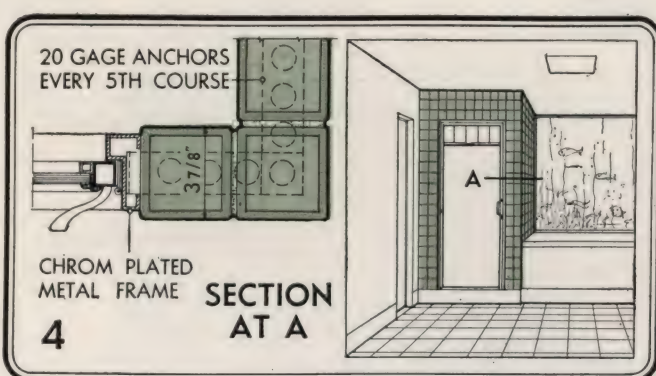
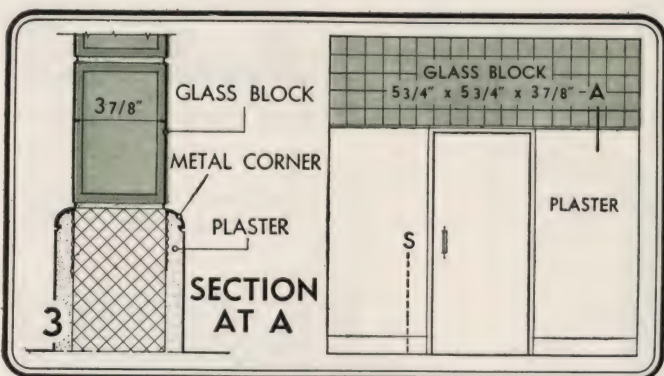
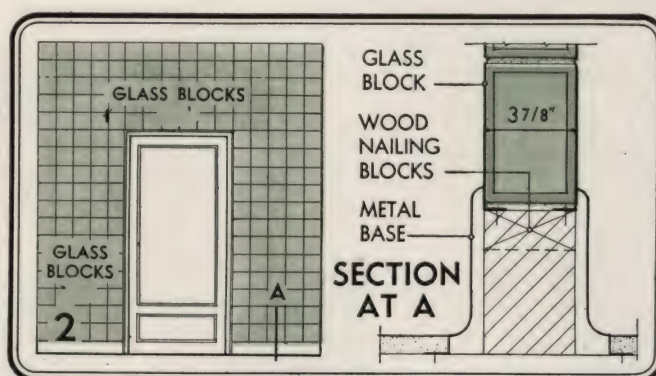
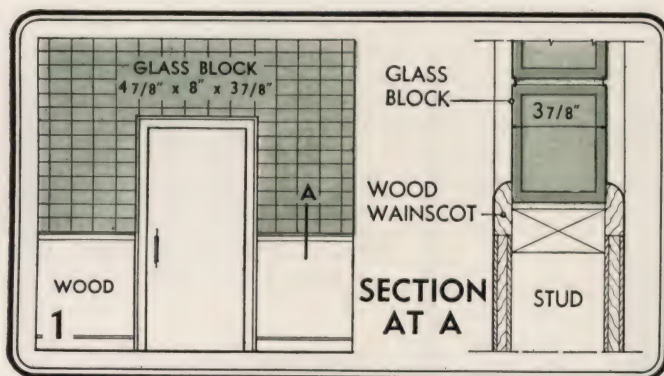


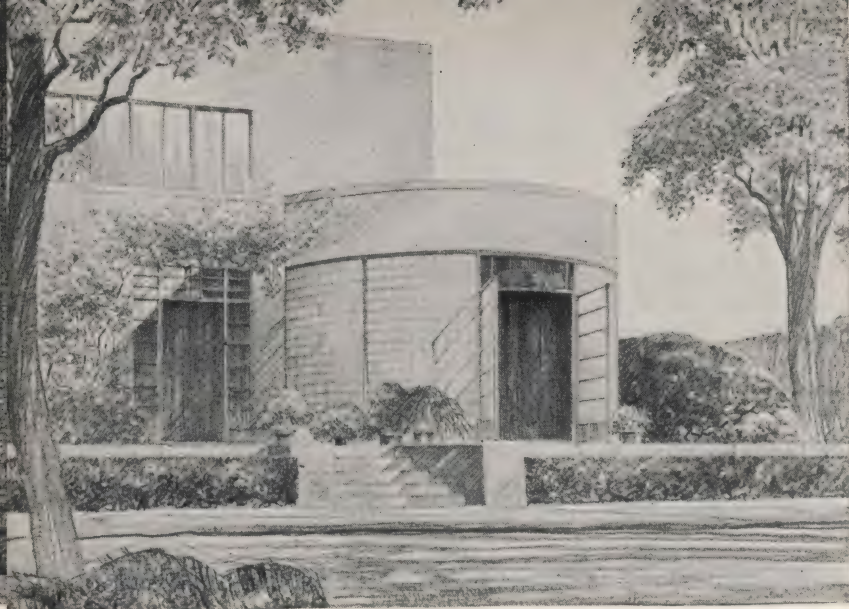
DETAIL OF ILLUMINATED COLUMN

SCALE 1/2" = 1' - 0"

INTERIOR PARTITIONS OF INSULUX MASONRY

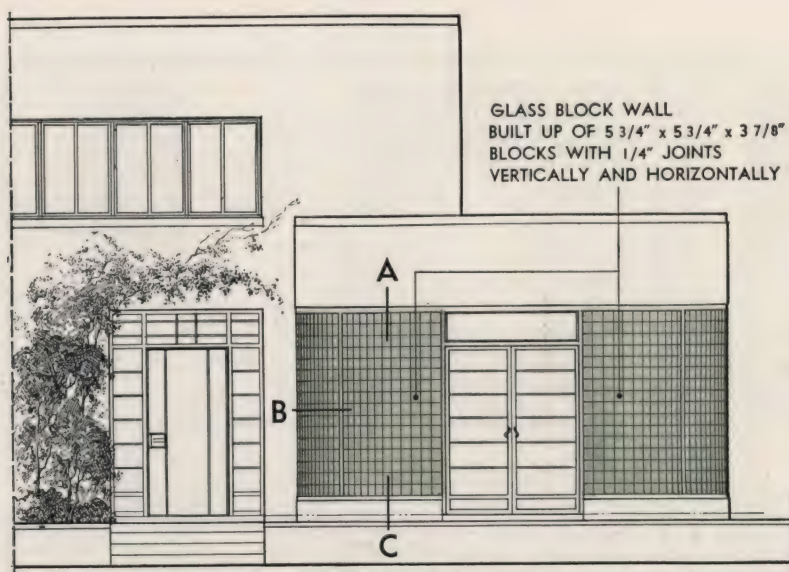
Insulux Glass Masonry offers many advantages over other materials in the construction of interior partitions. Office corridor partitions can be made highly resistant to sound transmission and attractive in appearance, as shown in Figures 1, 2 and 3. The high sanitary property of Insulux Glass Block and its lack of porosity makes it an ideal material for shower enclosures, hospital and food factory construction. In industrial and loft buildings, it is ideal for dividing spaces without the loss of light, as suggested in Figure 5. The decorative quality of Insulux Glass Block makes it a suitable material for many other uses, one of which is suggested in Figure 6.





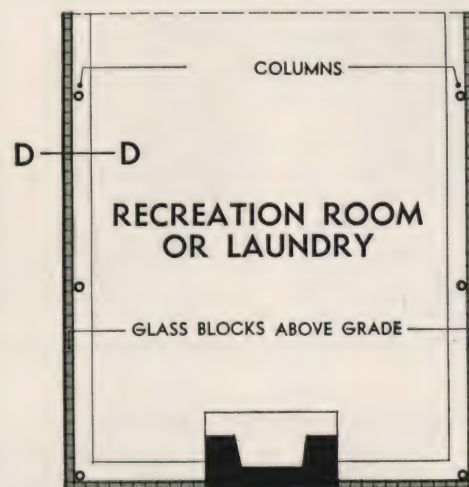
INSULUX MASONRY FOR RESIDENCES

On this page are suggested two uses for Insulux Glass Masonry, but many others will occur to the designer. The ability to admit light of pleasing quality while obscuring the vision of outsiders makes it adaptable to uses such as are indicated here. Openings overlooking unpleasant surroundings may be made to admit light, at the same time obscuring an unsightly view. The problem of securing adequate light in bathrooms without sacrificing privacy is one easily solved with Insulux Translucent Masonry. Basement laundries and recreation rooms can be well lighted by Insulux bulkheads, as shown in the drawing at the lower right.



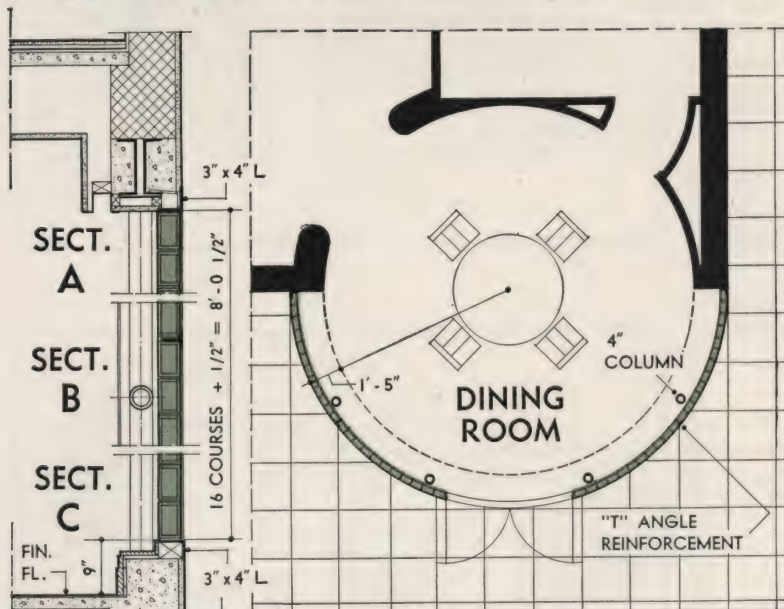
ELEVATION OF DINING ROOM

SCALE
1/8" = 1'-0"



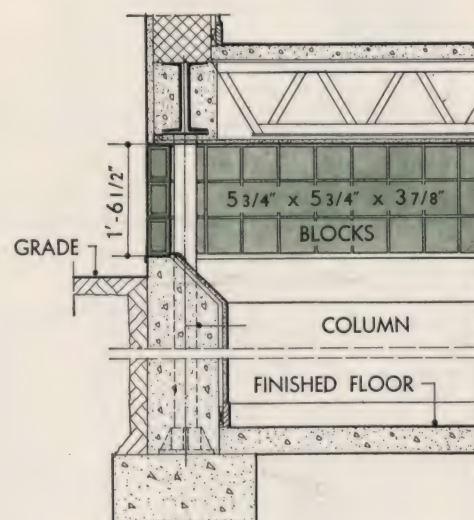
PLAN

SCALE 1/8" = 1'-0"



PLAN OF BAY

SCALE 1/8" = 1'-0"



SECTION D-D

SCALE 3/8" = 1'-0"

BASIC SPECIFICATIONS

GLASS BLOCK—Where glass block are shown on drawings or called for in these specifications, they shall be Insulux Glass Block as manufactured by the Owens-Illinois Glass Company.

SIZE AND CUTTING—All Insulux Glass Block shall be of size and cutting design as shown on drawings (or) shall be of the following sizes and cutting designs (here list the location, sizes and cutting design numbers.)

CEMENT—All cement used in mortar shall be a portland cement complying with the specifications of the American Society for Testing Materials.

LIME—All lime used for mortar may be either quicklime or hydrated lime.

Quicklime shall be fresh, well burned, free from ashes, core, clinker, other foreign materials or air-slaked particles.

Quicklime shall be slaked in a water-tight box using sufficient water to prevent burning and to make a creamy putty. During the slaking it shall be thoroughly hoed to prevent burning.

All slaked lime shall be aged for at least 7 days before using and the resultant putty shall be sufficiently stiff to permit easy shoveling.

HYDRATED LIME—All hydrated lime shall be of standard brand, shall meet the standard specifications of the American Society for Testing Materials and shall be delivered in the original packages of the manufacturer.

SAND—All sand used for mortar shall be clean, sharp with angular particles, free from vegetable matter, loam, clay or other foreign matter. It shall comply with the standard specifications of the American Society for Testing Materials.

MORTAR COLORS—All mortar colors shall be mineral colors of standard brand and shall be delivered to the job in the original packages of the manufacturer.

Mortar colors may be paste or dry powder, chemically inert and alkaline proof. All mortar colors shall be used according to manufacturer's directions.

WATER—Shall be clean, free from alkalis or organic matter.

MASONRY MORTARS—A masonry mortar of high strength and low volume change may be used instead of the portland cement and lime mixture, if desired. Any standard brand of masonry mortar, of which there are several meeting the above requirements, will be found satisfactory. Such masonry mortar shall be mixed and used according to the manufacturer's directions.

MORTAR—Materials used in making the mortar shall be measured by volume. For this purpose 25 pounds quicklime or 40 pounds hydrated lime shall equal one cubic foot of portland cement.

All mortars shall be composed of one part portland cement, one part lime and four parts sand. If conditions warrant it, sand can be altered to use as high as five parts. It shall be mixed in a watertight box and hoed from end to end until thoroughly incorporated. Consistency shall be such that the hoe is clean when withdrawn from the mortar.

LAYING—Fill all joints uniformly and completely and allow the mortar to set after each five courses. Compress or point joints on both surfaces with metal pointing tool. Tool when set. If block must be disturbed after laid, clean it and relay. All openings must have steel lintels except those spanned by an Insulux unit.

CALKING—Where called for by the details, use a plastic, non-hardening, water-repellant calking compound of approved brand.

REINFORCEMENT—Use 20 gauge x 1 3/4 in. x 6 ft. strips with 1 in. diameter perforations, 1 3/4 in. OC galvanized after shearing. Place reinforcing strips in all glass masonry panels over 6 ft. 0 in. wide, every fifth course. Lap strings 8 in. allowing ends to act as anchors to the masonry piers by projecting into the masonry at least 18 in.

SCIENTIFIC TEST DATA

Technical data are available as the result of extensive laboratory tests on many of the aspects of translucent-masonry construction. Additional information on scientific questions will be furnished gladly upon request.

COST OF INSULUX MASONRY

It is only by the Owens-Illinois method of manufacturing glass blocks that a product of great uniformity can be produced at low cost. Insulux Glass Masonry compares in first cost with medium quality 8 in. thick brick walls or average quality glazed steel sash—but offers high heat resistance and other advantages materially reducing the expense of maintenance. The simple reinforcing method recommended combines complete effectiveness and economical installation. Prompt quotations will be furnished by an Owens-Illinois representative upon request. The cost of any material in place is the only basis for accurate comparison.

ESTIMATING DATA

For 100 sq. ft. of wall	4 7/8 x 8 x 3 7/8	5 3/4 x 5 9/4 x 3 7/8	7 9/4 x 7 3/4 x 3 7/8
Thickness of Mortar Joint	1/4	1/4	1/4
Number of Blocks	241	400	225
Volume of Mortar Joints	2.47 cu. ft.	2.61 cu. ft.	1.96 cu. ft.
Crew Hours*	6 3/4	8	5 1/2
Thickness of Mortar Joint	3/16	3/16	3/16
Number of Blocks	348	409	229
Volume of Mortar Joints	1.88 cu. ft.	1.98 cu. ft.	1.48 cu. ft.
Crew Hours*	7 1/4	8 1/2	6

*Crew consists of 1 mason, 2 helpers.



The simple mortar joint, made possible by the Owens-Illinois method of securing bond, makes the cost of erection and repair of Insulux Glass Masonry lower than if the bond depended upon an irregularly shaped mechanical key. Ordinary care in handling Insulux Glass Blocks on the job will result in a complete absence of breakage. No greater precautions are necessary than in the handling of fine face brick, terra cotta or cut stone.

The background of the entire page is a repeating pattern of glass blocks, arranged in a staggered grid. Each block has a grid of small squares on its face, creating a textured, architectural look.

**A few of the many products
manufactured by Owens-Illinois**

Glass Containers

Bottle Closures

Air Filters

Red Top Insulating Wool

Electrical Insulators

Acoustical Wool

**MASONRY
MATERIALS**
- SECTION -

3

CATALOGS 30 to 33

BLOCKS AND TILE

NATIONAL FIREPROOFING CORPORATION

GENERAL OFFICES

202 E. Ohio Street, N. S., PITTSBURGH, PA.

BRANCH OFFICES

NEW YORK, 205-17 E. 42nd Street BOSTON, 142 Berkeley Street CHICAGO, Builders Building PHILADELPHIA, Architects' Building
DETROIT, 5737 Commonwealth Avenue and N. Y. C. R. R. BIRMINGHAM, ALA. (NORTH BIRMINGHAM)

IN CANADA: THE NATIONAL FIREPROOFING COMPANY OF CANADA, LTD., TORONTO, ONTARIO

NATCO STRUCTURAL CLAY TILE

The Natco Line of Structural Clay Products comprises units which can be economically and effectively used for walls, partitions and foundations, for fireproof floors of many kinds, as a protection for steel structural members, for roofs—in short, they have an application somewhere in every building, everywhere in some buildings.

Wherever used, Natco Structural Clay Tile give maximum strength with minimum weight. All units are made of selected clay, cured and burned under the

TRADE
NATCO
MARK

careful supervision of graduate ceramic engineers. Permanent in form and structure, they are not affected by heat, cold, dampness or chemicals. They do not warp or disintegrate. Being made of hard-burned clay, they are highly resistive to fire.

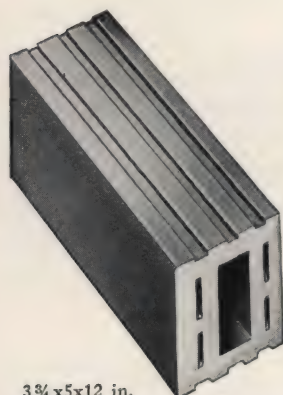
The Engineering Department of the Corporation will gladly co-operate in working out the most efficient and economical use of Natco Structural Clay Tile on specific applications.

NATCO GLAZED TILE FOR INTERIOR WALLS AND PARTITIONS

The different types of Natco Glazed Tile, described below, are glass-hard, are easily cleaned and kept clean. The colors, the shades, the glazed surfaces endure with no liability of any future maintenance, painting or repair bills. Proof against fire, the large comparatively light units are also quickly and easily handled and laid. The new De-Airing Process, used in its manufacture, by removing all entrapped air from the clay before it is formed into shape, eliminates imperfections and promotes true and even edges.

Natco Glazed Tile, due to its pleasing appearance, sanitary qualities, insulation advantages, as well as savings, both in first and maintenance costs, is ideal for walls, partitions, wainscots in public, institutional, commercial and industrial buildings of every type and kind. It readily adapts itself to strikingly modern as well as conservative decorative wall treatments.

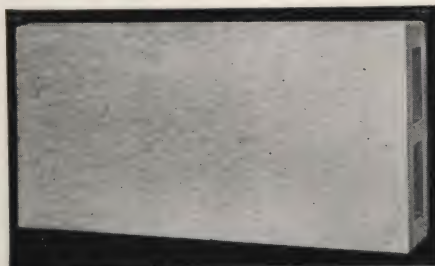
Below is a description of the various types of Natco Glazed Tile.



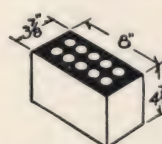
3 3/4 x 5 x 12 in.
V-400 Vitritile Wall Stretcher

Natco Glazed Vitritile—"V" Series—Face size 5x12 in.—horizontal, double shell, insulated construction. Made with 5x12-in. faces, smooth two faces or smooth one face, scored one face, for 3 3/4, 6 and 8-in. wall thicknesses, also in 1 7/8-in. thickness for furring. Complete with all necessary shapes and fittings illustrated and described on list, which we shall be glad to furnish. Furnished either salt or ceramic glaze.

Natco Decorata Tile—"D" Series—Face size 8x16 in.—in 1 7/8 and 3 3/4-in. wall thicknesses. Exposed face has newly developed slightly crinkled surface over which solid and mottled glazes are applied. Particularly well adapted for large wall expanses where they produce the new reflected light effects. Complete with all necessary fittings.



Natco Decorata
3 3/4 x 8 x 16 in.



Natco Glazed Vitribrik—"K" Series—Face size 4 7/8 x 8 in.—vertical construction. Made smooth two faces or smooth one face, scored one face for 3 3/4, 6 and 8-in. wall thicknesses, also in 1 1/8-in. for furring. Complete with all shapes and fittings necessary to take care of usual construction requirements.

Furnished either salt or ceramic glaze.

Natco Decorata Tile—"ND" Series—Face size, 5x8 in. New low-cost, horizontal, double shell construction, select one side, opposite side smooth or scored. Available for 3 3/4, 6 and 8-in. wall thicknesses, also 1 7/8-in. thickness for furring. Complete with all necessary shapes and fittings. Furnished either salt or ceramic glaze.

Standard Finishes and Colors—Ceramic glazes are high fired, burned at temperatures of 1800° to 2000° and comprise both highly lustrous and attractive matt and glossy effects in solid colors, such as black, white, dark brown, etc., as well as in mottled buffs, pinks, greens, grays, browns, etc.

Salt glazes are furnished in mingled buff shades. The mingling in both the ceramic and salt glaze is much more pleasing and artistic than uninteresting, uniformly matched shades.

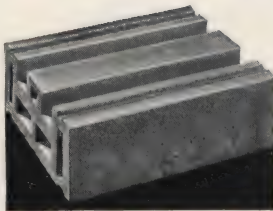
Natco Unglazed Facing Tile—"SU" Series

Face size 5x12 in. for 3 3/4, 6 and 8-in. wall thicknesses, also in 1 7/8-in. thickness for furring. Structurally, similar in appearance to Vitritile, has the same insulating and other utility advantages. Furnished with adequate assortment of closures, corners and bullnose fittings to take care of usual construction requirements. Colors are the natural, unfading mingled buff shades of hard-burned clay. The costs of walls of Natco Unglazed Facing Tile are much less than other forms of permanent facing.

Sheets showing shape details of any types of Natco Glazed or Unglazed Facing Tile will be gladly sent upon request.

FOR LOAD BEARING WALLS AND PARTITIONS

The types of Natco Structural Clay Tile described below, in general, are used for walls and partitions of commercial, industrial and public buildings, for backing walls, for complete walls faced with stucco or plaster, and for complete exterior walls.

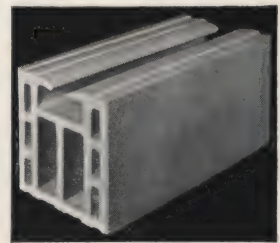


Speedwall Stretcher Tile
Series S-838
Size 8x2 1/4 x8 in.

NATCO SPEEDWALL TILE

A complete series for modern low cost, fireproof construction. Speedwall Series S-838, face size 2 1/4 x8 in. for 8-in. walls gives the appearance of an attractive brick residence with all the insulating and other advantages of structural clay tile.

In the 8x16-in. face size for 4, 8 and 12-in. wall thicknesses. Natco Speedwall with its harmonizing burned clay colors and textured surfaces should appeal strongly to any builder who wants attractiveness as well as economy. The handle feature, licensed under Wheeler Patent No. 1803158, makes 15 to 30 per cent savings in laying time as well as quickens construction.

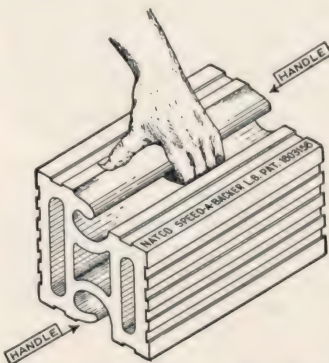


Speedwall Stretcher Tile
Size 8x16 in.

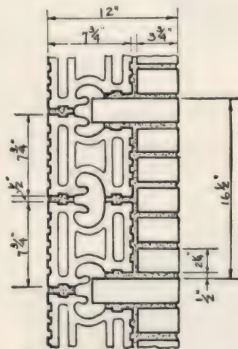
Natco Speed-A-Backer Tile

A complete backing unit for horizontal wall construction, with two handles, which promote great speed in laying, in that each unit is readily picked up and put in place with one hand at savings of from 15 to 30 per cent in laying time. This handle feature is licensed under Wheeler Patent No. 1803158. While generally furnished with scored interior faces, Speed-A-Backer can be obtained smooth on the interior, if desired. Sizes furnished are as follows:

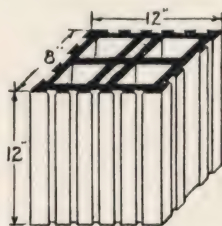
- 7 1/4 in. thick, 12 in. long for 12-in. walls
- 9 1/4 in. thick, 12 in. long for 14-in. walls
- 11 1/4 in. thick, 12 in. long for 16-in. walls



Natco Speed-A-Backer, the New
Tile Backing for Brick
Note handles at top and bottom



Detail of a Typical
Speed-A-Backer Wall
Note how effectively brick
bonds with the tile



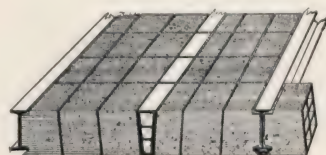
Natco XXX Wall Tile

Natco XXX Unglazed Load Bearing Tile

With large 12x12-in. faces, in 4, 6, 8, 10 and 12-in. wall thicknesses. Natco XXX Tile is furnished scored for stucco exterior and plaster interior, providing vertical construction with high load bearing strength.

Natco Flat Arch Floors

These floors may be installed very rapidly, regardless of temperature. They are thus ideal for winter construction. Holes may be cut at any time, or tile units omitted during the laying for pipe work. The all-tile ceiling provides an ideal plaster base.



Typical End Construction

Tables of safe loads, and similar data, are available to any one interested. The Engineering Department of the Corporation will gladly co-operate with you in working out any specific floor problem.

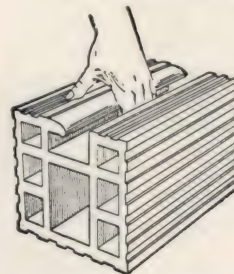
Natco Speedtile

For load bearing walls of all kinds, Natco Speedtile is ideally suited. The smooth, convenient handle in the tile itself, licensed under Wheeler Patent No. 1803158, speeds up the work with great construction savings. Furnished with both interior and exterior faces scored, or one face smooth. It is also effectively used as a backing tile, where the brick bonds into the tile wall every sixth course. Natco Speedtile is furnished as follows:

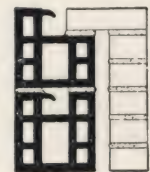
- No. 5 Speedtile—7 1/4 x5 x12 in. for 8-in. walls
- No. 8 Speedtile—7 1/4 x7 1/4 x12 in. for 8-in. walls
- No. 108 Speedtile—9 1/4 x7 1/4 x12 in. for 10-in. walls
- No. 128 Speedtile—11 1/4 x7 1/4 x12 in. for 12-in. walls

Natco Speedtile Backing is furnished as follows:

- No. 8, 108 and 128 Speedtile with No. 8A, 108A, and 128A Header.



No. 8 Natco Speedtile
Illustrates how handle
promotes speed in laying



Natco Speedtile Header
and Stretcher Units
in Brick Face
Construction

Smooth Load Bearing Tile

Both Natco XXX Tile and Natco Speedtile are also furnished with smooth interior and exterior faces where an inexpensive wall finish is desired. Used this way, each tile laid forms a complete section of wall.

Natco Girder and Column Covering

Well burned structural clay tile is not surpassed for fireproofing girders and columns. It saves dead load, promotes speed of erection, provides the best plastering surface, lowers insurance rates, and acts as a barrier against corrosion.

A table showing the clip and angle tile shapes to fit all standard beams is available and will be sent on request.

In addition, our Engineering Department will co-operate with you at any time in working out the best method of fireproofing columns, girders and beams in your buildings.

For Every Building Need

Natco Clay Roofing Tile in a great variety of soft natural color tones, Natco Segmentile for silos, storage bins, and protection for oil tanks, Natco Partitions and Furring Tile, Natco Book Tile for non-spalling roofs of glass factories and similar installations—these are but a few of the many Natco Structural Clay products available for every type of building need. Any desired information will be gladly furnished on request.

CERTAIN-TEED PRODUCTS CORPORATION

GYPSUM DIVISION

Manufacturers of Gypsum Partition and Furring Tile

GENERAL OFFICES

100 East 42nd Street
NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster Pages

PLANTS

ACME, TEX.

AKRON, N. Y.
FORT DODGE, IOWA

GRAND RAPIDS, MICH.
GYPSUM, OHIO

LARAMIE, WYO.
PLASTERCO, VA.

BLUE RAPIDS, KAN.

For Our Other Products, see File Index

GYPSUM PARTITION AND FURRING TILE

Our gypsum partition and furring tile is now identified under the following brand names: "Certain-teed" or "Certain-teed Acme."

The following data is pertinent to both brands.

Gypsum tiles are used for non-bearing construction in building interiors, such as partitions and wall furring, used as protection against fire on columns, in elevator shafts, stair wells, etc. These tiles possess all the necessary physical requirements for a perfect fireproofing material and, in addition, are light in weight, permitting easier and faster handling and cutting away of openings in a standard wall if necessary.

Gypsum partition tiles are also easily chased for conduits, switch boxes or pipe lines.

Grounds may be easily nailed to gypsum tile and bucks may be anchored by nailing with tenpenny cut nails directly into the end of each block course.

Another advantage of gypsum tile to be taken into consideration when designing the structural part of a building is the saving in dead load when using gypsum tile partitions.

Gypsum tile is not only extremely light, but because of the large units, less mortar is required for setting, and due to its uniform moulding in manufacture, accurate weight of gypsum is assured and a saving of plaster effected. All these savings tend to lessen the dead load and naturally reduce the cost of construction.

Fire Protection

Gypsum tiles have passed unusually severe and exhaustive tests on their fire-resistant properties. They are especially recommended for non-bearing, fireproof partitions, stairways and elevator enclosures, and unplastered, non-bearing warehouse partitions, and for similar construction where a highly fire-resistant material is required.



TRADE-MARK



Certain-teed
Gypsum
Partition Tile

Non-conductor of Sound

Gypsum partition tiles are excellent non-conductors of sound and for that reason are recommended and successfully used in hospitals, schools, office buildings, apartments, hotels and all buildings where a soundproof partition is desired. Authentic tests determine that less than 1/100 of 1 per cent of incident sound is transmitted through gypsum tile partition plastered with gypsum plaster.

Other Advantages

Gypsum tiles by test have been proved to embody maximum density, great crushing strength, supreme fire, sound, and vermin proof qualities, with slight water absorption and negligible breakage.

Certain-teed and Certain-teed Acme gypsum tile are marked off by inches both longitudinally and vertically. This feature minimizes labor expense and expedites erection.

Laying

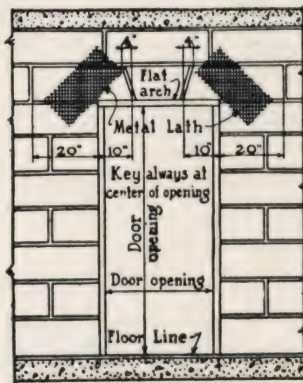
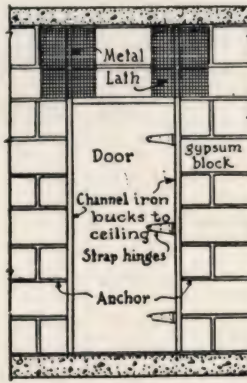
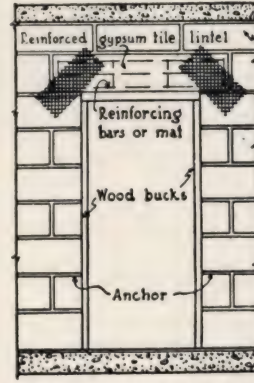
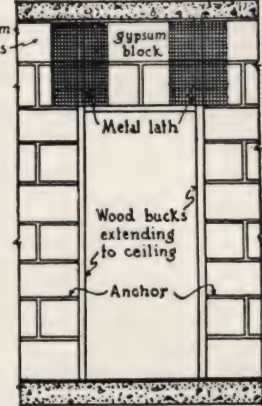
Gypsum unfibered plaster should always be used to lay these tiles. It makes a perfect bond and a stronger wall than either lime or portland cement mortar. Approximately 1/2 ton of plaster is required to set 1000 sq. ft. of block.

THICKNESS AND WEIGHTS OF CERTAIN-TEED AND CERTAIN-TEED ACME GYPSUM 12x30-IN. TILE

Thickness, in.	Ceiling heights up to —, ft.	Weight block per sq. ft., lb.	Weight mortar per sq. ft., lb.	Total Weight* per sq. ft., lb.	
				Plastered 1 side	Plastered 2 sides
2, solid	10	10.5	1.5	15.0	18.0
3, hollow	13	10.5	2.0	15.5	18.5
3, solid	15	14.5	2.0	19.5	22.5
4, hollow	17	14.5	2.5	20.0	23.0
6, hollow	28	19.0	3.0	25.0	28.0

*Allowing 3 lb. per sq. ft. for plaster, one side; 6 lb. per sq. ft. for plaster, two sides. (1/2-in. grounds.)

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

DETAIL SHOWING
JACK ARCH CONSTRUCTIONDETAIL OF DOOR WITH
CHANNEL IRON FRAMEDETAIL SHOWING REINFORCED
GYPSUM LINTEL CONSTRUCTION

DETAIL SHOWING WOOD BUCKS

GYPSUM PARTITION TILE CONSTRUCTION DETAILS

BASIC SPECIFICATION FOR GYPSUM PARTITION AND FURRING TILE

Using Certain-teed or Certain-teed Acme Gypsum Tile in a Fireproof (Fire-resistive) Building

Notes: This specification is prepared for use in connection with the installation of non-bearing gypsum partitions and furring in a fire-resistive building. It may be used as written if the contractor for partitions and furring is a Sub-Contractor to the General Contractor. If, however, the gypsum partitions and furring are to be included under Mason Work, or Lathing and Plastering, according to locality and conditions the opening paragraphs (Section I (a), (b) and (c)) should be modified accordingly.

After various paragraphs will be found interpolated notes—which offer information and suggestions. Notes included in () refer directly to preceding paragraph.

Following this specification will be found "General Notes" in explanation of various provisions of the specification which are referred to in the interpolated notes.

Alternate specifications are suggested and will be found in small type in [] inserted after the proper clauses or section of the main specification paragraphs.

Note for Specification Writer: When writing a specification for a project at hand it is only necessary to use the paragraphs that cover the type of construction contemplated. It may be necessary to slightly revise certain paragraphs to fit the individual requirements.

I. General

(a) The General Conditions of this specification are hereby made to constitute a part of the specification for the furnishing and installation of Gypsum Partition and Furring Tile.

(If partition and furring tile are to be furnished and set as a part of Masonry Work, or of Plastering Work, omit paragraph (a) and place the heading "Gypsum Partitions and Furring" at head of paragraph (b) changing it to (a).)

(b) This Contractor shall report any floors, door bucks, etc., and any walls, windows, etc., which are not secure, plumb, true and level to the General Contractor for correction before proceeding with any gypsum block work.

(In some parts of the country, the architect may wish to eliminate this provision depending upon local conditions; see also Par. (a) under General Notes.)

(c) This Contractor shall accurately lay out all partitions and furring and set one course of tile one block high before door bucks, etc. are placed.

(If Gypsum Partition and Furring are under Mason Contractors work, they will probably be laid out by the General Contractors superintendent and this paragraph may be eliminated.)

II. Extent of Work and Exceptions

(a) Furnish all materials, labor, scaffolding, etc. necessary to install and complete the following, ready for plastering.

(If there are any special places where gypsum block is to be used and any exceptions as here mentioned, this paragraph should be modified and the drawings noted accordingly.)

(b) All partitions enclosing or separating lobbies, corridors, rooms and elsewhere throughout the building, unless otherwise shown, marked or specified.

(c) All furring on the interior of, all exterior walls and all other places so indicated.

III. Materials

Partition and Furring Tile

(a) All of the foregoing shall be constructed of ("Certain-teed" or "Certain-teed Acme") gypsum tile as manufactured by the CERTAIN-TEED PRODUCTS CORPORATION, New York, N. Y., or other tile meeting the tests of the American Society for Testing Materials if approved in writing by the Architect. All blocks shall be thoroughly seasoned before shipment.

(If other than the types of Certain-teed tile on which this specification is based are to be used modify Par. (a) accordingly.)

(See Standard Specifications for Gypsum Tile adopted by the American Society for Testing Materials.)

(b) Unless otherwise indicated or specified all partitions shall be of (3, 4 or 6) in. hollow tile and all furring of (3 or 4) in. "split" tile. Where 2 in. tile is called for on the drawings, they shall be solid and where tile 3 in. or more in thickness is called for, same shall be hollow.

(If it is desired for certain enclosures to use solid tile where hollow are here called for or vice versa, Par. (b) should be changed to suit.)

(c) All blocks for partitions and furring shall be of standard 12x30 in. size. Not more than 8% of the tile used shall be less than a whole block except where required to fill out spaces. After delivery on the site, tile shall be stored in a dry location, well protected from dampness.

(d) This Contractor shall do all cutting, fitting or patching of tile required to accommodate any partitions or furring to electrical conduits, plumbing and heating pipes, etc. which may be installed ahead of his work.

Mortar

(a) All gypsum tile construction shall be laid up with gypsum mortar composed of unfibred cement plaster as manufactured by the CERTAIN-TEED PRODUCTS CORPORATION, thoroughly mixed in the proportions, by weight, of 1 part gypsum to not more than 3 parts of clean, sharp, dry sand. Gypsum mortar shall not be retempered and only as much mortar as can be used in 3 hours shall be mixed at one time.

IV. Partitions

(a) The first course of all gypsum tile used for permanently located partitions and for furring shall be laid in a bed of gypsum mortar spread on the rough floor slab. Tile courses must not be started upon frozen concrete nor upon cinder concrete when such is used for the purpose of fill only. Wherever a tile, cement or terrazzo base, etc. is to be installed and in any basement partitions or furring the starting course shall be of hollow clay tile equal in thickness to the gypsum tile specified.

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

(When partitions may be of a temporary nature such as those subdividing office space they may preferably be started on top of the finished floor to facilitate possible changes. This applies except on wood floors where the blocks should be started on the underlying masonry construction. When such subdividing partitions are shown on plans and are to be started on the finished masonry floor they should be so indicated and Par. (a) amplified accordingly. (See also Par. (b) under General Notes.)

(Wherever wall tiles are to be set against gypsum block, the specification writer should provide under the Specification for Tile Work the paragraphs given below which are quoted from the Basic Specification for Tile Work, Revised Edition, 1924 of the Associated Tile Manufacturers.)

Specification for Tile Work

"Wherever tile work is to be set against gypsum tile this Contractor shall furnish and place a layer of building paper; this shall be overlaid with stiffened expanded metal lath or wire lath. Lath shall be secured in place by special anchorage or lacing as conditions require."

"At the option of the tile contractor, one heavy coat of asphaltum paint or other equal dampproofing coat may be substituted for building paper back of the metal lath specified for use on gypsum tile."

(b) The gypsum block of all partitions shall be laid in horizontal superimposed courses with vertical joints broken. All blocks shall be solidly bedded in mortar and all vertical joints shall be full. Partitions shall extend from the floor, as before specified, to the height indicated. All permanently located full height partitions shall extend to the underside of floor construction above and all other to the ceiling and shall there be wedged with wedges cut from the block and with the joints slushed from both sides with gypsum mortar.

(c) Partitions intersecting brick, or other masonry walls, shall be securely anchored to such walls by means of approved masonry bond or metal anchors, or by 10d nails driven into the masonry joints at each gypsum block course.

(d) Partitions shall be bonded at the corners by overlapping alternate courses back and forth (log cabin fashion). All intersecting partitions shall be bonded by overlapping not less than at every third course. Overlapping tile shall cover the courses below to the full thickness of the construction. The ends of overlapping tiles where exposed on the face shall have the cores plugged with mortar by this Contractor as the tiles are laid.

V. Furring

(a) The gypsum tile furring shall be laid as is herein required for partitions. Furring shall continue to frame wherever plastered or wood jambs are specified. All furring in contact with the construction shall be securely anchored to the masonry by means of 10d nails driven into the masonry joints at intervals not greater than every 2 ft. horizontally and vertically. Metal ties or other approved methods for securing furring to the masonry may be used.

Note: To avoid excessive breakage of furring tile in transit the CERTAIN-TEED PRODUCTS CORPORATION will furnish a 3 or 4-in. furring tile which can be easily split on the job, making a 1½ or 2 in. tile as may be required by the specification.

(See "General Notes" Par. (c) for data regarding the use of split furring against stone walls.)

VI. Bucks

(See also "General Notes" Par. (d) and (e).)

(a) **Wood**—Wood bucks will be furnished and set as specified under "Carpenter Work."

(b) All wood bucks of openings 3 ft. or less in width shall be secured to the ends of the partition tile with 10d nails driven into every course. For openings wider than 3 ft. anchor strips of metal lath, wire mesh or sheet metal shall be nailed or stapled securely to the bucks and built into each course by this Contractor.

(c) **Metal**—Metal bucks will be furnished and set as specified under "Metal Work" with anchors built into the partition by this Contractor.

(Both wood and metal bucks are referred to in the above paragraph. Provisions for either or both, as required, should be inserted, by the specification writer, in specifications for trades affected, as follows:)

Specification for Carpenter Work

"Wood Bucks for Gypsum Partitions—At all doors, interior sash and all other openings required, bucks shall be furnished and set by this Contractor. They shall be not less than 1½ in. thick and of a width equal to the thickness of the block and shall have not less than ½ in. grounds nailed to the sides and projecting beyond the bucks not less than ¼ in. forming a rabbet to receive the ends of the partition tile. All bucks shall be carefully braced plumb and true and left ready to receive gypsum tile, finished jambs, heads and trim."

"Wood Bucks for Gypsum Furring—Note: As these will vary according to kind of wall, location and reveal of windows and doors the architect should here describe to suit or refer to detail drawings."

"Other Bucks—Note: The Architect should here specify bucks for openings in any walls or partitions of other materials than gypsum."

Specification for Metal Work

"Metal Bucks—Note: The architect should here specify the metal bucks for openings in walls and partitions. It is not considered practical to include definite specification for same herein, as the type of metal buck to be used and the method of installation will depend upon the height of the partition, size of opening and other features of construction."

VII. Nailing Strips and Grounds

See also "General Notes" Par. (f)

(a) Nailing strips for baseboards, chair rail and such trim will be furnished by the Carpenter and shall be set in the gypsum tile construction by this Contractor or as otherwise arranged by him.

(b) The nailing strips, not less than ¾ in. thick and of such other dimensions as to completely cover the end of the block, shall be nailed directly to one end of each gypsum tile with not less than four 10d nails. Nailing strips for toilet and other heavy fixtures shall be 1½ in. thick and shall be spaced 15 in. o.c.

(c) Plaster grounds will be furnished and set as specified under Carpenter Work.

(Nailing strips are referred to in the above paragraphs. Provisions should be made in the specification for Carpenter Work for the furnishing of nailing strips and grounds, as follows:)

Specification for Carpenter Work

"Nailing Strips and Grounds—Furnish the contractor for Gypsum Tile Work with nailing strips to be spaced 30 in. on center wherever baseboard, chair rail, etc., occur—these shall be ¾ in. thick, 12 in. long and in width equal to the thickness of the block specified for partitions and furring."

VIII. Lintels

Note: Several types of lintels are here specified, each of which has its suitable use according to the size of the opening, type of block, height of ceiling, etc. As any or all of these may occur in one building, the architect should select the type applicable, and cross out any of those not to be used.

For Openings Not Over 22 in. Wide

(a) **Built-up**—Openings in partitions of gypsum tile which are not more than 22 in. in width shall be spanned by a gypsum tile which shall have a bearing at each end upon the jamb of not less than 4 in.

For Openings Not Over 4 ft. Wide

(a) **Jack Arch**—When openings are more than 22 in. but not more than 4 ft. in width, the gypsum tile over the opening shall be laid in the form of a jack arch. Skewbacks shall be cut in the tile used over the jambs, intermediate tile shall be beveled to fit the skewbacks, and a key block to fit shall be set in the center of the jack arch. Bevel cuts shall not be less than 4 in. to the foot. The skewback tile shall have a bearing on the jambs of not less than 12 in. nor shall they be set so as to project beyond the face of the jambs to a distance greater than ½ of the bearing.

(b) When jack arch construction is employed, the jack arch shall be reinforced with strips of not less than No. 14 gauge woven wire mesh not less than 2 in. wide, or the reinforcement may consist of 2 strips of not less than No. 24 gauge perforated metal not less than 1 in. wide. The reinforcement herein prescribed shall be continuous and shall be bedded in the mortar joint between the jack arch and the course immediately above extending into the partition construction not less than 30 in. beyond the face of each jamb.

(Jack arches may often be omitted when substantial header bucks are used but this is a case for decision on each individual job. It has been suggested that mat reinforcement set in a bed of mortar on paper on top of the wood buck and the tile set immediately to secure a good bond would prove very efficient. With an additional strip of reinforcement in the next course, this method would probably prove satisfactory for openings up to 6 ft. wide when the ceiling height is not unusual. This method is merely suggested here as a possible alternate.)

For Openings More Than 4 ft. Wide

(a) **Metal**—Openings in partitions of gypsum tile which are more than 4 ft. in width shall be spanned by metal lintels as shown on the drawings or as specified under "Iron Work." All metal lintels shall be of such form as to provide a distributed and uniform bearing upon the supporting construction and shall provide a bearing upon each jamb of not less than 8 in. (Unless supported by the metal buck.)

IX. Blank Heading

Note: This space is left blank in order that the architect may include specifications for arched openings or other special features not provided for under other headings.

X. Completion

(a) This Contractor shall leave his work complete and the premises clean of mortar, broken tile and rubbish resulting from his work. All partitions and furring shall be left rigid, plumb and true ready to receive plastering.

XI. Plastering

Note: If it is desired to include plastering as a part of this work the following specification paragraphs should be included, otherwise the specification writer should include them in his own Specification for Lathing and Plastering. *It is imperative to use gypsum plaster on gypsum tile.*

(a) All base plaster shall be (Certain-teed, Acme, Beaver or Southern) brand of (Neat Plaster, Fibered Cement Plaster or Unfibered Cement Plaster) sanded according to specifications for all base coat work, and all finishing plaster shall be (Certain-teed, Acme, Beaver or Southern) brand of Gypsum (Finishing or Gauging) Plaster, as manufactured by the CERTAIN-TEED PRODUCTS CORPORATION, or other plaster if approved in writing by the architect.

(CERTAIN-TEED PRODUCTS CORPORATION also manufactures Prepared Sanded Plasters at Akron, N. Y., Gypsum, Ohio, and Grand Rapids, Mich., for base coat work, if desired, change Par. (a) accordingly.)

(If other than the types of Certain-teed, Acme, Beaver or Southern plaster on which this specification is based are to be used modify Par. (a) accordingly.)

Sand

(b) All sand for base coats shall be clean and sharp, free from alkali, salt or quick-sand and from objectionable amounts of loam or clay and shall be graded from fine to coarse. All sand used shall meet the requirements of the A.S.T.M. specifications for plastering sand.

(If any sand float finish is to be included, the sand for same should be specified in Par. above.)

Mixing

(c) All plaster shall be mixed in clean, tight boxes or in machine mixers specifically designed for the purpose and in accordance with best local practice, the intent of the specifications and the direction of the maker on file in the office of the architect.

(Mixing and the importance of clean water and direction of the maker are of vital importance to good work.)

XII. Proportions and Application

(a) The base coat shall consist of one part fibred plaster, to not more than three parts by weight of dry sand.

(b) Surfaces of the blocks shall be wet before plastering but not so wet that water remains standing on surface.

(c) The plaster shall be applied to a thickness of $\frac{1}{2}$ in. beyond the block faces in two operations. A thin layer shall

first be applied with strong pressure to secure a good bond and shall be followed immediately with a second layer which shall be straightened to a true, even plane keeping back sufficiently from the grounds, or inside the $\frac{1}{2}$ in. thickness, to allow for finishing coat. The surface shall be broomed or otherwise roughened to receive the finishing coat.

Finishing Coat

(a) *Smooth White Finish* shall be Prepared Trowel Finish mixed to the proper consistency with clean water only, and applied according to manufacturer's directions.

Note: If it is desired, a mixture of lime putty and finishing plaster may be used for the smooth white finishing coat in which case substitute the following paragraph:

[(a) *Smooth White Finish* shall be one measure of dry Gauging Plaster or Gypsum Finishing Plaster to not more than 3 measures of Finishing Lime Putty thoroughly and uniformly mixed. If lump lime is used it must be perfectly slaked. Hydrated Lime should be soaked for 24 hours before using.]

(b) Finishing coat shall be applied throughout the building except behind skirting and any place noted below and shall be smooth white finish trowelled to a dense, true surface.

(Here insert any exceptions)

Note: If *Sand Float Finish* is desired in some locations instead of *Smooth White*, add the following paragraph after, at end of, Par. (b), noting the exceptions and giving the locations.

[(b) *Sand Float Finish* shall be four measures Gypsum Cement Plaster unfibred, of a brand manufactured by CERTAIN-TEED PRODUCTS CORPORATION, one measure of perfectly slaked fresh burned plasterer's lump lime putty or standard hydrated finishing lime and five measures of clean sharp sand.]

Note: This specification does not contemplate that colored, textural or special effects will be required as a finish in any portion of this job. If so, insert the location and description under *Finishing Coat* in appropriate paragraphs.

(c) Finishing coat shall be applied when the base plaster is set firm and hard and not until thoroughly dry. The surface of the base coat shall be sprinkled with water before the finishing coat is applied.

(It is important that the base coat of any plastering job shall be thoroughly dry before the finish coat is applied. There are some who recommend that the finish coat shall be applied while the brown coat is damp. This, however, will permit *drying cracks*, if they occur, to show in the finish coat which will be obviated if the brown coat is permitted to dry first and then moistened to receive the finishing coat.)

(d) All surfaces throughout shall be applied and finished in the most workmanlike manner and shall be left plumb or level and true and even planed, free from trowel marks, blotches and without joinings showing.

(e) All finished plastering shall be protected from wind and in hot dry weather shall be sprinkled with water until set. In freezing weather, this Contractor shall arrange with the General Contractor that the plastering shall be protected from frost until set hard.

(In windy, hot, dry weather openings should be screened but not closed. In all clear weather after plastering has set, doors and windows should be kept open as fully as possible. Screens are not necessary after plaster has set.)

GENERAL NOTES**Regarding the Provisions of the Preceding Basic Specifications**

Note: The above Basic Specification, if used as herein given, will provide for all gypsum tile partition and furring required to make a complete job, also includes suggested specifications for plastering on gypsum tile, and useful data pertaining to the work of other trades that contact with gypsum tile work.

(a) The contractor for the gypsum tile work should be impressed with the importance of reporting any unsatisfactory conditions of parts to receive the partitions and furring as he will naturally be held responsible for the satisfactory installation of the tile ready for the plastering. *See Basic Specification I (a).*

(b) Gypsum Tile partitions may be started on finished floors except wood. This will allow the partitions to be moved at any time without requiring repairs to the floor. Where wood sleepers and floors are used, the partitions should, as specified, be started on the masonry construction. *See Basic Specification IV (a).*

(c) Due to the rough interior surface of rubble stone walls, split furring is not recommended for such locations. The use of a 2 in. solid tile built like a free standing partition inside the stone wall will be found very satisfactory. *See Basic Specification V (a).*

(d) Before specifying the type of bucks to be used, due

consideration should be given to the height of the ceilings, the size, height and frequency of openings and character and weight of doors, if any, to be hung at such openings. Where the openings are numerous or large, or the doors heavy especially as in the case of fire doors, the bucks should extend from the floor to the ceiling. Metal lath, placed as specified in Section VIII will lessen the possibility of plaster cracks if any strain occurs at the junction of bucks in any partition. *See Basic Specification Section VI.*

(e) In specifying metal bucks, the architect should bear in mind those parts of the completed construction which come under the work of other trades and specify accordingly. Steel channel bucks under "Iron Work"; wood bucks, trim, etc. under "Carpenter Work"; the setting of the gypsum tile under "Lathing and Plastering." *See Basic Specifications Section VI.*

(f) All nailing strips and plaster grounds should be specified under "Carpenter Work." If patented grounds or nailing blocks are desired, so specify. Heavy fixtures such as toilets, tanks, blackboards, etc., should be bolted through the block or nailed to nailing bucks not less than $1\frac{1}{2}$ in. thick of the character specified for other trim, spaced not to exceed 15 in. *See Basic Specifications Section VII.*

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

STRUCTURAL GYPSUM DIVISION

AMERICAN CYANAMID AND CHEMICAL CORPORATION

(FORMERLY STRUCTURAL GYPSUM CORPORATION)

EXECUTIVE OFFICES

30 Rockefeller Plaza, NEW YORK, N. Y.

SALES OFFICES IN THE PRINCIPAL EASTERN CITIES

TELEPHONE
Circle 7-0100

For Gypsteel Gypsum Pre-cast Floors and Roofs and Gypsteel Gypsum Plasters, see File Index

Products

GYPSTEEL GYPSUM PARTITION TILE.

Also Gypsteel Gypsum Soffit Slabs, Shoe Tile and Column Covering.

Construction Details and Installation

Our architectural service sheet No. 4 contains complete construction details and specifications and full directions for installation. A copy of this service sheet will be sent on application to any of our offices.

Facilities

The central location of our plant at Linden, N. J., makes rapid deliveries possible in the New York Metropolitan area. Orders will be delivered in 24 hours and if received in the morning can be delivered the same afternoon. Our trucks deliver direct to the job or to the dealer's yard.

AMERICAN CYANAMID AND CHEMICAL CORPORATION is one of the two largest producers of structural gypsum products in the United States.

GYPSTEEL GYPSUM PARTITION TILE

Where Gypsteel Gypsum Partition Tile May Be Advantageously Used

- (1) Non-bearing partitions, walls of corridors, and column covering.
- (2) Fire division walls.
- (3) Covering for steel members, such as girders, beams, and columns.
- (4) Heat ducts and light wells.
- (5) Elevator, dumbwaiter, corridor and stairway enclosures.
- (6) Wall furring (when split).

Special Advantages of Gypsteel Gypsum Partition Tile

The high quality of Gypsteel Gypsum Partition Tile is due to the combination of purity of the gypsum with a distinctive process of control that insures uniformity in the finished product.

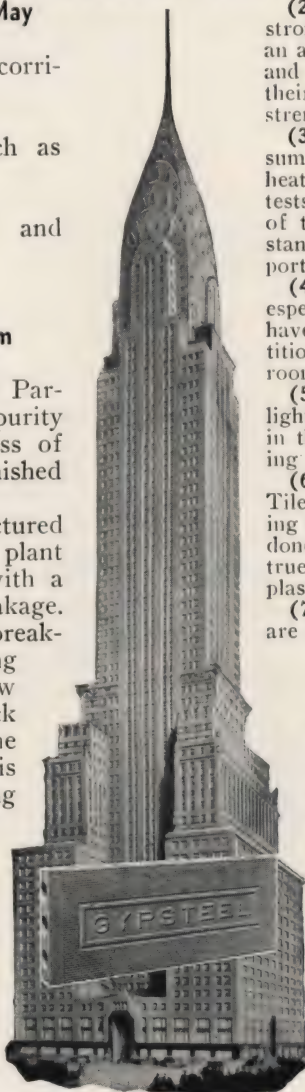
The great purity of gypsum manufactured by the Gypsteel Process at our Linden plant insures a stronger and tougher block, with a minimum waste from chipping and breakage.

Another factor tending to minimize breakage and waste is our express trucking service within and adjacent to the New York Metropolitan area, whereby block is delivered from our mill direct to the job within a few hours by truck. This truckload delivery assures clean, strong block free from breakage and waste.

The machinery by which Gypsteel Block is made at our Linden plant insures absolute accuracy and produces blocks true to size, accurately proportioned, and of uniform weight, strength and density.

General Advantages of Gypsum Partition Tile

(1) **Fireproof**—Gypsum Partition Tile are approved for first class fireproof construction by the Building Departments of all cities and have the highest rating in all Insurance Rating Bureaus.



Chrysler Building

One of the many modern buildings in which Gypsteel Partition Tile are used throughout

(2) **Savings in Labor**—Gypsteel Partition Tile are stronger than ordinary tile. Breakage is reduced to an absolute minimum with resulting savings in material and labor. Additional savings are achieved because of their accuracy in size and uniformity in composition, strength and weight.

(3) **Heat Insulation**—The great superiority of gypsum partition tile in preventing the transmission of heat has been frequently demonstrated by numerous tests under many conditions. Distinctly high qualities of thermal protection for embedded steel are an outstanding characteristic of gypsum partition tile. Reports of actual tests are available on request.

(4) **Sound Insulation**—Tests made many times, especially at the New England Conservatory of Music, have demonstrated the superior value of gypsum partition tile in retarding conduction of sound from one room to another.

(5) **Light Weight**—Gypsum Partition Tile are so light in weight that their use effects a large reduction in the total dead-load, and this permits of corresponding savings in the steel framework and foundations.

(6) **Savings in Plaster**—Gypsteel Gypsum Partition Tile are strong, they chip and break very little, meaning there is less mortar used, and less pointing-up to be done. Their uniformity of size and proportions assure true plaster base and effect a substantial saving in the plastering.

(7) **Perfect Plaster Base**—Gypsteel Partition Tile are made of gypsum, with a very small percentage of wood planer chips, and laid up in gypsum mortar. The chemical bond established between the gypsum tile, and the gypsum in both the mortar and plastering, produces a wall of great strength and rigidity.

(8) **Easily Altered**—Gypsum Partition Tile cuts with a saw, permitting of alterations being made in partitions with a minimum of expense and annoyance.

Sizes

All Gypsteel Partition Tile are 12x30 ins. They are furnished in standard thicknesses 2, 3 and 4 ins. solid and 3, 4, 5 and 6 ins. hollow.

WEIGHT PER SQ. FT. OF GYPSTEEL PARTITION TILE

Description of Gypsteel tile per sq. ft., lbs.	Weight of Gypsteel Furring and Partition Tile per sq. ft., lbs.	Weight mortar per sq. ft., lbs.	Total weight plastered one side per sq. ft., lbs.	Total weight plastered two sides per sq. ft., lbs.
2x12x30" Solid..	10.5	1.5	13.5	16.5
3x12x30" Hollow	11.0	2.0	14.0	15.0
3x12x30" Solid..	13.0	2.0	16.0	19.0
4x12x30" Hollow	13.0	2.5	16.0	19.0
6x12x30" Hollow	20.0	3.0	23.0	26.0

Note: Wt. plaster on one side, 3 lb. per sq. ft.

**MASONRY
MATERIALS**
- SECTION -

3

CATALOGS 34 to 43

**MASONRY CEMENTS,
LIME AND
MORTAR COLORS**

THE CARNEY CEMENT COMPANY

MANKATO, MINN.

DISTRICT SALES OFFICES

CHICAGO, ILL.

MINNEAPOLIS, MINN.

ST. LOUIS, MO.

MILLS: MANKATO and CARNEY, MINN.

QUARRIES: CARNEY, MINN.

The Pioneer of the Industry

THE CARNEY CEMENT COMPANY has manufactured cement since 1883—and originated masonry cement as it is known today. Carney is unlike other cements—it is made from a deposit of natural cement rock particularly adapted to the manufacture of highly plastic, truly hydraulic masonry cement. This rock contains the correct proportion of lime and clay so that when burned and ground the resulting cement produces a lasting bond under all conditions of use—either above or below ground no further addition of lime is needed on the job. The only materials added to Carney Cement in manufacturing are those that give the cement its watertightness and its resistance to efflorescence. THE CARNEY CEMENT COMPANY maintains elaborately equipped, efficiently manned chemical laboratories for the purpose of controlling constant uniformity of the product.

CARNEY CEMENT
for Brick and Tile Mortar

Quantity Requirements

Carney Cement is packed in cloth or paper sacks—one cubic foot each—four sacks to the barrel. One barrel, mixed with

three parts sand, will lay up 800 to 1000 brick, depending upon the thickness of the mortar joint. Furthermore, waste from dropping and wall cleaning is largely eliminated where Carney mortar is used, due to its excellent plasticity.



Past Records Have Earned for Carney Cement Its Prominent Position in the Field of Masonry

The above example is one among many which explains the favorable position which Carney Cement enjoys. Over twenty years ago, Carney Cement was approved by Graham, Anderson, Probst and White for the masonry on the Field Museum, Chicago. Seventy-five carloads of Carney were required for the project. Last year, the same architects who have approved the use of Carney on many subsequent projects, used Carney on the largest post office in the world at Chicago. Performance is the greatest salesman of Carney Cement. Carney possesses an unsurpassed record for excellence of service that extends over a period of 50 years. A few recent Carney jobs are listed below.

Prominent Buildings in Which Carney Was Recently Used

LOCATION	BUILDING AND ARCHITECT
Roseburg, Ore.	Veterans Hospital
Canandaigua, N. Y.	Veterans Hospital
Ft. Sill, Okla.	Officers' Quarters, etc.
Houston, Tex.	International Harvester Bldg.—Private Plans
Lewiston, Me.	U. S. Post Office Bldg.
Middletown, Pa.	Administration Building and Officers Quarters
Sheridan, Wyo.	U. S. Veterans Hospital
St. Louis, Mo.	Laclede Gas Light Co. Power Plant—Private plans
Sioux Falls, S. D.	Washington High School—Hugill & Blatherwick
Fairfield, Ohio	U. S. Central Heating Plant
Capitan, Ft. Stanton, N. M.	U. S. Marine Hospital
Manteno, Ill.	State Hospital Group—C. Herrick Hammond, Springfield, Ill.
Milwaukee, Wis.	Bathhouse—Clas & Clas
St. Paul, Minn.	City Hall and Courthouse—Ellerbe & Company
Missoula, Mont.	Lowell and Central Schools—H. E. Kirkemo
La Crosse, Wis.	Heilman Brewing Co. Bldg.—Private Plans
Superior, Wis.	Parkland Sanitarium—R. C. Buck, Inc.
Wichita, Kan.	International Harvester Bldg.—Private Plans

Specifications

All mortar shall be composed of one part Carney Cement, manufactured by THE CARNEY CEMENT COMPANY, Mankato, Minn., and three parts clean, well-graded sand, mixed and measured by volume. The Carney Cement and sand, if mixed by hand, shall be mixed thoroughly in a dry state.

For machine mix put sand and a portion of water in machine first, then add Carney Cement, after which additional water shall be added to produce a mortar of the desired workability under the trowel. When color is added, an approved brand of good double strength color shall be used in accordance with the directions of the manufacturer of the particular color used. Color should always be used as an addition and not as a replacement of cement.

In warm weather common brick shall be wetted; in cold weather sand and water shall be heated, and wall units kept dry and free from frost before being placed in wall. For parapet walls, chimneys and all masonry above roof line, as well as other places requiring maximum strength, durability and load-bearing capacity the mixture shall be one part Carney Cement and two parts sand, mixed as above.

A Perfectly Balanced Mortar

Possessing all the desirable properties in masonry cement which embody ample strength, workability, and high water retaining capacity.

High, Water Retaining Capacity

The degree of plasticity or workability of a mortar is directly related to the water retaining capacity of the cement. Carney Cement has an extremely high, water retaining capacity. This attribute also assures a better bedding of the brick in the mortar—a feature which is particularly attractive where porous, highly absorbent brick is used.

Simple Mix

Correct mortar consistency is assured where Carney Cement is used. Mixing errors are avoided because of the simplicity of mixing. One part of Carney Cement mixed with three parts sand and water produces a perfect mortar. No other materials are required.

Tight, Efflorescence Resisting Joints

As stated above, the high water retaining capacity of Carney Cement assures better bedding of the brick in the mortar. This assures a tightly knitted wall. As a further precaution against water penetration through joints, calcium stearate, which is water repellent, is added to Carney Cement when manufactured. Efflorescence due to soluble salts which may be present in the sand or water is prevented by the calcium stearate component of Carney Cement.

Non-fading and Frost Resistant

The moisture repelling character of Carney Cement assures permanent resistance to fading of colored mortars. This feature also prevents the disintegration of the joints resulting from frost action. Carney-laid joints resist moisture absorption and consequently are immune to frost action.

HY-TEST CEMENT CO.

Manufacturers of Hy-Test Masonry Cement

GENERAL OFFICES
PHILADELPHIA, PA.

Product

HY-TEST MASONRY CEMENT, a finely ground waterproofed plastic smooth-working cement for laying brick, stone, tile, terra cotta and other masonry units, combining the smoothness in lime and the strength in Portland cement.



Composition

Hy-Test Masonry Cement is an intimate mixture of Portland cement and hydraulic lime, both meeting A.S.T.M. requirements, into which is ground at the mill a recognized waterproofing compound which not only waterproofs but tends to reduce shrinkage of the mortar and increases bonding efficiency between the mortar and brick.

How It Is Used

The proper proportion is one part Hy-Test with three parts clean graded sand, by volume, with sufficient water added to bring to proper consistency. No admixtures of any kind necessary to produce a plastic mortar.

Advantages

The main function of any mortar is to efficiently and durably bond the brick together in order to keep water from penetrating through the joint.

Instead of making our own claims as to the advantages secured with Hy-Test cement, send 5¢ to the Superintendent of Documents, Washington, D. C., for a copy of U. S. Research Paper No. 683 which will give you unbiased facts of the results produced with 50 different kinds of mortars tested at the National Bureau of Standards in a three year investigation supported by the National Lime Association, Portland Cement Association, American Face Brick Association, and a group of Masonry cement manufacturers,—or write to the American Society for Testing Materials for copy of "Permeability Tests of Eight Inch Brick Walls," by L. A. Palmer, describing the amount of water passing through 240 eight-inch brick walls laid with different kinds of mortars.

Hy-Test Masonry Cement was used in the tests conducted at the Bureau of Standards and is described in the above mentioned papers as Mortar No. B VI.

The investigation definitely established that most water penetrates a wall "between the mortar and the brick" and that therefore a mortar must have (a) bonding efficiency, (b) flexibility, (c) low shrinkage (volume change) subsequent to hardening, (d) must be able to maintain the bond under weather exposure of freezing and thawing, (e) high water retaining capacity.

(a) **Bonding Efficiency**—The American Society for Testing Materials Reprint containing the article "Permeability Tests of 8-In. Brick Wallettes," by L. A. Palmer, prints tables showing Mortar No. B VI as

having produced the greatest extent of adhesion with a diversified range of brick, because the figures definitely show that the average penetration of water through a series of brick walls laid with Mortar No. B VI was less than with any other type of mortar.

(b) **Flexibility**—U. S. Research Paper No. 683, page 641 rates Mortar No. B VI as one of the mortars that gave the most concordant results on flexibility, or stretching properties.

(c) **Low Shrinkage**—U. S. Research Paper No. 683, page 636 rates Mortar No. B VI among those mortars having low volume change (low shrinkage) subsequent to hardening.

(d) **Bond Durability**—U. S. Research Paper No. 683, page 638 rates Mortar No. B VI as having the highest possible record in durability of bond after freezing and thawing for a period of one year.

(e) **Water Retaining Capacity**—U. S. Research Paper No. 683, page 641 rates Mortar No. B VI as one of the mortars having high water retaining capacity or the power to resist undue suction by highly porous brick.

Strength

The highest stress on brickwork permitted by any Building Code in America is 250 lbs. per square inch or 18 tons per square foot at 28 days. Hy-Test mortar will withstand 6 times this load in the same period when cured under normal conditions. It has been approved by the Building Departments of every important city in the United States.

Specification

Mortar—"All mortar for interior and exterior brickwork below and above grade, for rubble stone, interior partitions and other masonry units shall be composed of Hy-Test Waterproofed Masonry Cement (B VI grade) and clean graded sand, with enough water to bring to proper consistency. Three cubic feet of sand shall be added to each bag of Hy-Test cement. If mortar is mixed by hand the cement and sand shall first be thoroughly mixed dry before the water is added.

Waterproofing must be ground into the cement at the mill. It is of utmost importance to thoroughly wet all brick that absorb water rapidly. In cold weather proper precautions shall be taken to protect the green work from freezing."

General Information

Write to the HY-TEST CEMENT COMPANY, 1616 Walnut Street, Philadelphia, and we will send gratis a copy of U. S. Research Paper No. 683, and American Society for Testing Materials booklet containing the article "Permeability Tests of Eight-Inch Brick Walls" by L. A. Palmer.

MEDUSA PORTLAND CEMENT COMPANY

Manufacturer of Medusa Products
1000 Midland Building, CLEVELAND, OHIO

SALES OFFICES

CHICAGO, ILL., 1530 Builders Building
GRAND RAPIDS, MICH., Grand Rapids Trust Building
MANITOWOC, WIS., 16th and River Street
MINNEAPOLIS, MINN., 215 So. 6th Street

NEW YORK, N. Y., 1521 New York Central Building
PITTSBURGH, PA., 1829 Oliver Building
WASHINGTON, D. C., 817 Woodward Building
YORK, PA., 25 No. George Street

BAY BRIDGE, OHIO

TOLEDO, OHIO
MANITOWOC, WIS.

PLANTS

DIXON, ILL.
NEWAYGO, MICH.

YORK, PA.

WAMPUM, PA.

MEDUSA PRODUCTS

MEDUSA GRAY PORTLAND CEMENT—Plain and Waterproofed.

MEDUSA HIGH EARLY STRENGTH PORTLAND CEMENT.

MEDUSA WHITE PORTLAND CEMENT—Plain and Waterproofed.

MEDUSA-MIX, the Waterproofed Masonry Cement.



MEDUSA STONESET NON-STAINING CEMENT.

MEDUSA WATERPROOFING for CONCRETE and MORTAR.

MEDUSA PORTLAND CEMENT PAINT.

MEDUSA FLOOR COATING.

T. R. C.—The Bitumenized Cement.

MEDUSA-LITE.

MEDUSA WHITE PORTLAND CEMENT Plain and Waterproofed

Medusa Plain White Portland Cement

MEDUSA PORTLAND CEMENT COMPANY was the first manufacturer to produce and place on the market for commercial purposes a true white portland cement. The plant to produce this product was built in 1907 and the material has been sold and shipped continuously to all parts of the world since that time.

Quality—MEDUSA WHITE PORTLAND CEMENT is a true portland cement which passes the requirements for portland cement of the American Society for Testing Materials. It differs from the gray portland cement only in that it is *pure white* and non-staining. All other qualities are similar.

Where to Use—It produces a concrete and mortar of the same great strength as regular gray portland cement and should be used in place of gray cement when pure white, or tinted effects, are desired. Many beautiful colored effects can be secured through the use of colored aggregates or pure mineral colors.

Mortar Specifications—For a non-staining mortar for the setting and pargeting of cut stone, we recommend:

1 part Medusa White Portland Cement.

3 parts clean sand, crushed white marble or screened limestone chips, graded so that all coarse particles will pass a $\frac{1}{8}$ -in. screen with no more than 15% passing a No. 60 screen.

With every bag of MEDUSA WHITE PORTLAND CEMENT use 10 lbs. of hydrated lime or one-fifth part by volume of the cement. Properly slaked and aged lime putty may be used instead of hydrated lime.

Swimming Pools—This product is used for plaster coating the inside of concrete swimming pools on the sidewalls and floors. Also in pouring the entire walls of the tank. Complete specifications on pool construction will be found in our book "How to Make Good Waterproofed Concrete," A. I. A. File No. 4.

Stucco—Complete specifications for Portland Cement Stucco will be found in our book "Portland Cement Stucco with Medusa Waterproofed White Portland Cement," A. I. A. File No. 21-d-1.

Terrazzo—For complete specifications, see our book "Terrazzo Specifications," A. I. A. File No. 22-e-1.

Cast Stone—MEDUSA WHITE PORTLAND CEMENT (plain or waterproofed) should be used for facing of cast stone. Complete specifications can be secured from the Cast Stone Institute, Chicago, Ill.

Other Uses—Architects and Engineers are finding new uses for this material. A few of them are interior plastering; curbs; white concrete for buildings; sidewalks; steps; art marble; floor tile; runways for airports, etc.

Medusa Waterproofed White Portland Cement

This is our regular white portland cement with which MEDUSA WATERPROOFING POWDER is mechanically ground during manufacture, insuring a complete dispersion of the powder and obtaining its maximum waterproofing value. The waterproofed cement passes all requirements for portland cement and those of the American Society for Testing Materials. We recommend its use for all work requiring white portland cement.

The use of MEDUSA WATERPROOFED WHITE PORTLAND CEMENT reduces absorption and penetration of water to a negligible degree. It is also very effective in reducing volume change and eliminating crazing and hair-checking. In mortar it will prevent the staining elements in other masonry material from passing into the stone.

The workability is enhanced by the waterproofing content.



Home of the Architect, Eugene Fleming, Fairfield, Iowa
Medusa White used for stucco

Right:

Home of Herbert Holmgreen, San Antonio, Tex.
MORRIS & NOONAN, Architects
Medusa Waterproofed White used in finish coat of stucco



MEDUSA WATERPROOFING FOR CONCRETE AND MORTAR

Powder and Concentrated Paste

Description

All concrete and mortar below grade or exposed to the elements should be waterproofed to give insurance against wet and damp walls and floors, to retard disintegration due to the freezing and thawing of moisture absorbed—and ground acids.

Authorities on waterproofing agree that the most effective way to prevent water absorption in concrete and mortar is to incorporate a water repellent material which breaks down capillary attraction on the surface. This method is most economical and assures the user that the entire mass of concrete or mortar is thoroughly and permanently waterproofed.

MEDUSA WATERPROOFING (Powder or Paste) is the original water repellent waterproofing for concrete and mortar. It has been used for more than 30 years under severe water conditions and always gives satisfaction. It contains a large percentage of stearate. Stearate is recognized as the best waterproofing agent known.

Directions for Use

Powder: Use 2 lbs. of MEDUSA WATERPROOFING POWDER to each sack of portland cement used. MEDUSA WATERPROOFING POWDER is added dry to the cement and aggregate. Mix dry with cement alone where hand mixing is employed.

Concentrated Paste: One gallon of MEDUSA CONCENTRATED PASTE weighs eight (8) pounds—enough to properly waterproof thirteen (13) sacks of cement. We recommend one gallon (8 lbs.) of Concentrated Paste be dissolved in 12 gallons of water at 60° F. or above. Add one gallon of this waterproofing paste solution for each sack of cement when mixing the concrete or mortar.

The same waterproofing results are obtained with either Powder or Paste.

The use of MEDUSA WATERPROOFING is recommended only in territories where MEDUSA WATERPROOFED GRAY PORTLAND CEMENT or MEDUSA WATERPROOFED WHITE PORTLAND CEMENT is not obtainable. MEDUSA WATERPROOFED CEMENTS—Gray and White—are our regular portland cements with which the correct amount of MEDUSA WATERPROOFING is mechanically ground during

the process of manufacture, insuring a complete dispersion and so obtain the maximum waterproofing value.

The use of MEDUSA WATERPROOFED CEMENTS eliminates the use of admixtures on the job and the expense of supervision to insure that the correct amount of waterproofing has been added. MEDUSA WATERPROOFED CEMENTS have proved successful for 30 years.

Specific Uses

MEDUSA WATERPROOFING should be used in all concrete and mortar below grade; when exposed to the elements or moisture. A few specific uses are:

Mortar	Cast Stone	Storage Silos
Swimming Pools	Concrete Products	Tunnels
Basement Walls	Shower Baths	Subways
Basement Floors	Terrazzo	Dairy Barns
Retaining Walls	Stucco	Dairy Plants
Plaster Coats	Elevator Pits	Burial Vaults

Waterproofed Mortar

The use of MEDUSA WATERPROOFING in portland cement mortar will tend to prevent the subsequent discoloration and unsightly appearance of brickwork caused by efflorescence which may be attributed to the mortar.

The use of MEDUSA WATERPROOFED MORTAR prevents the absorption of moisture through the joints. Unless the mortar is waterproofed, it is possible that such a quantity of water will be absorbed as to cause considerable inconvenience and damage.

Packages

MEDUSA WATERPROOFING POWDER is shipped in 40-lb. paper-lined cloth bags. MEDUSA CONCENTRATED WATERPROOFING PASTE is shipped in 8-lb. (1-gal.) cans; 40-lb. (5-gal.) cans and 225 and 400-lb. steel drums.

Literature

Our book "How to Make Good Waterproofed Concrete," A.I.A. File No. 4, contains full specifications and "Medusa Waterproofing for Concrete and Mortar," A.I.A. File No. 7-a-2 will be mailed free, upon request.

MEDUSA-LITE FOR INTERIOR WALLS

Washable, Durable, Quick Drying, Economical, One Coat

Description

MEDUSA-LITE is a super flat wall finish developed to meet the exacting requirements for a truly beautiful, economical, durable flat finish paint.

This quick drying paint is used on walls, ceilings, and other interior surfaces of concrete, brick, tile, stone, plaster, insulating board, wood, metal, canvas, wall board, etc. Because of its fast drying qualities the walls and ceilings of homes can be painted in the morning and will be dry so that the house can be set in order in the evening. MEDUSA-LITE is inexpensive, easy to apply and can be used on so many different surfaces it has a tremendous advantage for use in painting warehouses, factories, stores and dairies.

How Medusa-Lite Is Used

MEDUSA-LITE comes in paste form and requires only water as a thinner. This is why it can be sprayed with ordinary equipment or applied with a brush. Because

of its unusual easy working qualities, MEDUSA-LITE is much less expensive in application. One coat is usually sufficient for most surfaces. No sizing or previous treatment is necessary before painting walls, whether old or new, which is a tremendous saving. The paint itself is odorless.

Color

MEDUSA-LITE is made in white and seven popular pastel shades. These colors are intermixable and can be tinted with either dry colors or colors in oil. The colors themselves are permanent, do not turn yellow, and are limeproof. They have a high light reflective value—90% and greater. Colors do not change under the influence of light, heat, or fumes which affect other coatings.

Coverage

Most surfaces require only one coat. The approximate covering range is from 300 to 700 ft. per gallon depending on the type of surface to be painted.

MEDUSA STONESET CEMENT**A Non-staining, Waterproofed, Mortar Cement****What It Is**

MEDUSA STONESET CEMENT is a non-staining mortar cement which has been waterproofed by the addition of the proper amount of MEDUSA WATERPROOFING mechanically ground in at the mill during the process of manufacture.

It is manufactured from the same raw materials as MEDUSA NON-STAINING WATERPROOFED WHITE PORTLAND CEMENT. These raw materials are free from the elements which cause staining, and waterproofness is assured.

MEDUSA STONESET CEMENT has the smooth workability and great plasticity which is so necessary in stone setting mortar.

Where to Use

MEDUSA STONESET CEMENT is to be used in mortar for setting, pargeting, and pointing of cut stone, and for laying up face brick. Its low cost also permits its use for mortar in the backup wall as well as for exterior wall.

The use of one mortar throughout the wall has many advantages from the standpoint of economy and convenience. The use of a non-staining, waterproofed mortar throughout the wall provides additional assurance against staining and efflorescence.

We do not recommend MEDUSA STONESET CEMENT for any other use except masonry mortar. MEDUSA PORTLAND CEMENTS, white and gray (plain or waterproofed), should be used for other purposes.

Because of its white color and great plasticity MEDUSA STONESET CEMENT is ideal for laying up face brick. It can be easily tinted to the desired shade.

Non-staining

A non-staining cement means a cement that will not stain the stone with which it comes in contact. Long and exhaustive tests have proved that MEDUSA STONESET CEMENT is non-staining.

Waterproofed

Authorities agree that it is absolutely necessary that all non-staining mortars be waterproofed to prevent the staining elements in other materials in backup masonry from passing into the stone.

TENSILE AND COMPRESSIVE STRENGTH

1 part Medusa Stoneset Cement, 3 parts standard sand

Days	Pounds per sq. in.	
	Tensile	Compressive
3	120	750
7	160	1010
28	205	1825

MEDUSA-MIX—MASONRY CEMENT**Waterproofed**

A waterproofed masonry cement with a Portland cement base for laying-up brick, concrete units, tile and other masonry units. MEDUSA-MIX provides the essentials of a good masonry mortar—workability, plasticity, waterproofness, strength and durability. Great plasticity and workability are obtained without the addition of lime. Its color is a striking advantage when used with or without mortar colors.

Saves Time

MEDUSA-MIX spreads easily and smoothly and permits joints to be struck cleanly and rapidly eliminating waste from dropping. This feature, coupled with the fact that no hydrated lime is required, effects a considerable saving. It has an *initial* set of approximately 3 to 4½ hours and a *final* set of approximately 6 to 8 hours.

TENSILE AND COMPRESSIVE STRENGTH

1 part Medusa-Mix, 3 parts standard sand

Days	Pounds per sq. in.	
	Tensile	Compressive
3	128	633
7	197	1371
28	267	1795

Note: MEDUSA-MIX conforms to the United States Government Master Specifications SS-C-181 covering requirements of a masonry cement, which provides for a compressive strength of not less than 175 lbs. per sq. in. at the age of 7 days, for a 1:3 mortar.

Directions for Use

Mix 1 part of MEDUSA-MIX with 3 parts of clean, well-graded masons' sand, and add enough water for the desired consistency.

Four sacks of MEDUSA-MIX (66 lbs. gross, each) mixed with sand in 1:3 proportions will make ½ cu. yd. of mortar.

The fact that MEDUSA WATERPROOFING is mechanically ground into MEDUSA STONESET CEMENT during the process of manufacture is assurance that the cement is absolutely waterproofed.

The Medusa Process of mechanically grinding in MEDUSA WATERPROOFING in the manufacture of MEDUSA WATERPROOFED CEMENTS, white and gray, has been *successful for 25 years.*

Workability

MEDUSA STONESET CEMENT produces a mortar of great workability and plasticity. Stone setters will find the workability and plasticity of MEDUSA STONESET CEMENT to be of particular advantage in the placing of stone. Its easy spreading qualities make it especially adaptable for pargeting and for use in mortar for the backup wall.

Color

The color of MEDUSA STONESET CEMENT is white, which harmonizes well with all shades of limestone, granite, marble, etc.

Specifications for Mixing

MEDUSA STONESET CEMENT is to be mixed in approximate proportions of 1 part of MEDUSA STONESET CEMENT to 3 parts of sand, by volume. The sand should be well graded, clean, and free from organic matter. To facilitate hand mixing, the sand should be dampened before MEDUSA STONESET CEMENT is added.

No Admixtures Are Necessary

When using MEDUSA STONESET CEMENT no admixtures are necessary to secure waterproofness or plasticity. This fact is extremely important to the architect, contractor and owner.

The contractor is saved the expense and labor of adding admixtures and the architect is assured that the proper amount of waterproofing has been added.

Setting Time

The setting time of MEDUSA STONESET CEMENT is approximately:

Initial—3 hours 40 minutes. *Final*—7 hours 15 minutes.



Cleveland Club, Cleveland, Ohio

MEADE & HAMILTON, Architects

THOMPSON-STARRET COMPANY, Contractors

MEDUSA-MIX used in laying up all brick work. MEDUSA WHITE PORTLAND CEMENT used in mortar for setting of all stone

MEDUSA PORTLAND CEMENT PAINT

For Concrete, Brick and Masonry

Description

MEDUSA PORTLAND CEMENT PAINT is a patented material which has as its base MEDUSA WHITE PORTLAND CEMENT specially prepared, with which we have ground chemicals and color pigments of a permanent nature. It contains no oil, glue, lime, casein or other material affected by the chemical action of lime, alkali or water.

Colors

MEDUSA PORTLAND CEMENT PAINT is furnished in nine colors:

White	Green	Cream
Stone Gray	Red	Spanish Buff
Pearl Gray	Blue	Black

Packages

Shipped in 5 lb. packages, 10 lb. and 50 lb. metal cans and 350 lb. steel drums, all having friction tops.

Full directions for application will be found in each container.

Swimming Pools

MEDUSA PORTLAND CEMENT PAINT has been extensively used for swimming pools and the success of this work has been demonstrated by the thousands of satisfied customers. Being immune to the effect of water containing the proper amount of chemicals used to keep the pool sanitary, presenting a surface readily cleaned by scrubbing, containing no adulterant that could become the breeding place for germs, this paint is a most satisfactory product for use in swimming pools.



The Margaret Manson Weir Memorial Pool, Weir Memorial Park, Weirton, W. Va.

Covering Capacity

For ordinary smooth masonry surfaces the covering capacity will range from 200 to 350 sq. ft. per 10 lbs. of paint for one coat. There are exceptionally rough and extremely porous surfaces such as cinder and Haydite blocks where the above coverage will not apply.

Mixing and Application

To mix the paint measure out the amount of water required and pour the paint into the water slowly, stirring well to prevent forming of lumps.

The paint should be applied within two hours after being mixed.

Immediately after applying the paint, the brushes should be thoroughly washed with clean water and hung up to drain and dry.

First Coat—Use 5 quarts of water to 10 lbs. of paint. Add the paint slowly while stirring the water. This will prevent the forming of lumps.

Second Coat—Same as above except that 4 quarts of water should be used with 10 lbs. of paint. Be sure to wet the first coat before applying the second.

A thinner paint is recommended for the first coat so that it can work its way into the cracks and surface pores and seal them, preparing a good base for the second coat.

The second coat can be applied the day following the application of the first coat.

Each coat should be lightly sprayed as soon as it has hardened sufficiently so as not to damage the paint.



Coast Guard Station, Milwaukee, Wis.
Painted with MEDUSA PORTLAND CEMENT PAINT

MEDUSA FLOOR COATING

For Concrete Basement and Industrial Floors

Description

MEDUSA FLOOR COATING is a product composed principally of rubber hydrocarbon derived from the finest crepe rubber, and this product is fully covered by patents. The physical qualities of this material partake of those of rubber, but provide many unique advantages that must not be grouped nor confused with so-called "rubber paints."

Its alkali resistance is not affected by the lime usually present in concrete floors. The extreme hardness of MEDUSA FLOOR COATING withstands abrasive conditions. This protective coating affords stability to the concrete.

Colors

MEDUSA FLOOR COATING is furnished in eight colors:

White	Battleship Gray	Brown	Green
Light Gray	Chinese Red	Red	Black

Packages

Shipped in quarts, gallons, 5 gallons and 55 gallon drums.

Covering Capacity

On the average smoothly trowelled floor, the coverage is about 600 sq. ft. per gallon, one coat.

Mixing and Application

MEDUSA FLOOR COATING should be thoroughly stirred before applying. Dilute the first coat with 35% turpentine, or mineral spirits.

MEDUSA FLOOR COATING resists moisture but must have a dry surface for application. The floor should be clean; free from dirt, oil, grease, etc. To assure this use a muriatic acid wash of 10% solution.

Around laundry tubs, we suggest the floor be cleaned with a solution of two pounds trisodium phosphate to one gallon of hot water. When either of the above solutions are used, let stand for 15 minutes; then wash off with clean water, let the surface dry before applying coating.

MEDUSA FLOOR COATING dries to touch in one hour under favorable conditions so that two or three coats may be successively applied. (Be sure that one coat is dry before application of the next coat.) Under ideal conditions the floor will be ready for normal service within 24 hours; for severe use the coating should be allowed to dry for 2 or 3 days.

The first coat should be well brushed into the surface, using a short bristle brush. The second coat should be brushed out to give even spread and good covering capacity. On a surface where there is considerable wear, we suggest a third coat. This extra coat will more than repay you for the additional coating used and the time used to apply it.

ROCKLAND-ROCKPORT LIME CO., INC.

Rockland Waterproof Lime for Leakless Masonry

ROCKLAND, MAINE

GENERAL SALES OFFICE—50 East 42nd Street, NEW YORK, N. Y.

Description

Rockland Waterproof Lime is a high-grade pulverized quicklime containing active waterproofing ingredients added at the manufacturing plant by special process (patented). When slaked with water it produces a lime putty which is remarkably fat and plastic. Masonry mortar mixed one part Rockland Waterproof Lime putty, one part portland cement and six parts sand (or richer in lime content) is permanently non absorptive and water repellent. Rockland Waterproof Lime is packed in moistureproof, Cellophane lined, 80-lb. paper bags, 25 bags to the ton.

Advantages of Rockland Waterproof Lime

Mortar made with Rockland Waterproof Lime has all the advantages of regular lime mortar, has increased workability before set, and is permanently waterproof, after set, in the finished wall.

Because the waterproofing elements are incorporated in the lime at the mill, there is no necessity for special supervision by the architect. Therefore the effectiveness of a water repellent mortar of this kind is not dependent on the accuracy of a laborer.

Comprehensive laboratory tests for water permeability prove that mortar made with Rockland Waterproof Lime is superior to mortar waterproofed by the addition of integral waterproofing compounds. Testing laboratory data will be sent on request.

While extreme conditions of leaking masonry are usually due to actual cracks in the mortar and bond failures which leave openings between the mortar and the adjoining surfaces, even a mortar without cracks and perfectly bonded to adjoining surfaces frequently absorbs considerable water through capillary pores which inevitably occur in almost any mortar.

Since the mortar comprises up to 25 per cent of a brick wall and since the mortar may be much more absorbent than the surrounding brick, it is possible that more than 50 per cent of the total water absorbed by the wall enters by absorption through the mortar joints which act as feeders to the adjoining surfaces of both face course and back-up courses of brick. Hence, the mortar joints deserve primary attention in any attempt to eliminate or reduce absorption.

The ideal mortar for building a perfect masonry wall appears to be a mortar of high lime content which, when hardened, is permanently non absorbent and water repellent.

Used in sufficient quantities Rockland Waterproof Lime is a preventive of efflorescence. A close inspection of hundreds of buildings substantiates this claim.

Strength

A mortar made with one part of portland cement, one part of Rockland Waterproof Lime putty and six parts of sand (all by volume) is safe for loads of 250 lbs. per sq. in.

This is considerably in excess of the requirements for mortar strength on any modern building. According to Professor MacGregor's tests, made at Columbia University, the strength of a brick wall using a 1-1-6 mix is fully as great as a brick wall laid up with a 1-3 portland cement mix with no lime.



Authoritative References

Recognition of the advantages of a rich lime content is reflected in the present specifications of leading architects and engineers. One part portland cement, one part lime putty and six parts of sand by volume is now recommended by the Common Brick Manufacturers Association, and the Face Brick Manufacturers Association. The U. S. Bureau of Standards R. P. No. 321, "Volume Changes in Brick Masonry Materials," shows that a mortar containing one part of portland cement, *two parts of lime* and nine parts of sand had less shrinkage than a 1-3 portland cement mix. Similar conclusions in the advocacy of rich lime mortar were reached by tests made by the Massachusetts Institute of Technology, the Mellon Institute of Pittsburgh and other independent scientific bodies.

A committee of the Boston Society of Architects (New England Chapter of A.I.A.) recommends lime in masonry mortar in proportions "not less than one part of lime to one part of cement and six parts of sand by volume."

The Supervising Architect's Office of the Treasury Department of the United States, the Veterans Bureau, the Department of Public Works of the State of New York, public utilities, such as telephone companies, railroads, etc., as well as thousands of individual architects, now recognize lime's essential place in sound mortar.

Cost

Rockland Waterproof Lime reduces the cost of mortar very considerably. Cost analyses show a saving of a dollar to three dollars a yard. Possessing as it does all the qualities necessary for the best mortar, and these at lower cost than comparable materials, architects should have no hesitancy in specifying it, or recommending its use to contractors.

Masonry Mortar Specifications

Cement—Shall be standard brand of Portland Cement of a quality meeting the United States Government Master Specification.

Lime—Shall be Rockland Waterproof Lime slaked into putty according to the manufacturer's directions and allowed to cool at least 48 hours after slaking. The lime shall be of a quality meeting the United States Government Master Specifications SS. Q 351 for Pulverized Quicklime.

Sand—Shall be clean, well-graded and shall pass the A.S.T.M. test for organic matter and shall be approved by the architect.

Water—Shall be clean, fresh and of a quality fit for drinking.

Proportions—All proportions shall be by volume.

Mortar for masonry above grade shall be of the following proportions:

- 250 lbs. *per sq. in.* safe load
- 1 part portland cement
- 1 part Rockland Waterproof Lime putty.
- 6 parts sand

All mortars shall be thoroughly mixed, by machine if possible, and shall be used within one hour from the time the cement is added to the mix.

A PARTIAL LIST OF BUILDINGS WITHOUT LEAKY WALLS

Rockland Waterproof Lime has been used on the jobs listed below.

They represent all types of construction—natural stone, artificial stone, solid brick and brick veneer. Many of these build-

ings are the very finest in design and construction; some are commercial jobs where speed is the prime consideration and where careless workmanship using ordinary mortars would inevitably result in leaky masonry.

STATE	CITY	PROJECT	ARCHITECT
Connecticut	Bridgeport	Sears-Roebuck Building	H. C. Elton & Co.
	Bristol	Southern New England Telephone Exchange	Douglas Orr
	Cheshire	Southern New England Telephone Exchange	Private Plans
	Collinsville	St. Patrick's Church	Frank A. Berry
	Guilford	Guilford Memorial Library	Geo. Archer Quick
	Hamden	Brock-Hall Dairy Corp.	Jacob Feld
	Hartford	Connecticut General Insurance Co. Warehouse	F. M. Teich
	Middletown	Wesleyan College	McKim, Mead & White
	Mountford	Memorial Union Church	Payne & Keefe
	New Haven	Yale University, Divinity School	Delano & Aldrich
	New Haven	Yale University, Quadrangles, High and Library Streets	James Gamble Rogers
	New Haven	Yale University, Quadrangles, Elm and College Streets	John Russell Pope
	New Haven	Yale University, Graduate School, York Street	James Gamble Rogers
	New Haven	Yale University, Sheffield Scientific School and Administration Building	Zantinger, Borie & Medary
	New Haven	Yale University, Britton Hadden Memorial Building	Adams & Prentice
	New Haven	Yale University, Bowers Hall, Addition to Sage School of Forestry	Delano & Aldrich
	New Haven	Yale University, Sarah Wey Tompkins Memorial (Hospital Group)	Henry C. Pelton
	New Haven	Yale University, The Ray Tompkins House, Yale Y Club	John Russell Pope
	New Haven	Yale University, Yale News Building	James Gamble Rogers
	New Haven	Yale University, Two Dormitories, Trumbull College	James Gamble Rogers
	New Haven	Yale University, Berkeley College	James Gamble Rogers
	New Haven	Timothy Dwight Dormitory Group	Douglas Orr
	New Haven	Y. M. C. A.	Joseph Della Valle
	New Haven	St. Vincent De Paul Church	Geo. S. Chappell, Associates Payne & Keefe
	New London	Memorial Home for Aged Women	E. L. Scholfield
	New London	Addition, Chapman Technical High School	Shreve, Lamb & Harmon
	New London	Windham House Dormitory, Connecticut College for Women	A. Graham Creighton
	New London	Williams Memorial Institute, Palmer Hall	A. Graham Creighton
	New London	Williams Memorial Institute, School, Gymnasium and Auditorium	Payne & Keefe
	New London	Bulkeley High School	Private Plans
	Norwalk	Southern New England Telephone Exchange	Ebbets & Frid
	Somes	School, Somersville Section	Office of Lorenzo Hamilton, Inc.
	South Meriden	Grade School	Elbert J. Richmond
	Waterbury	Grace Baptist Church	R. W. Foote
	West Hartford	Dial Equipment Building (Southern New England Telephone Co.)	Maginnis & Walsh
	West Hartford	Administration Building, Mt. St. Joseph Academy	Fletcher-Thompson, Inc.
	West Haven	State Armory	Crow, Lewis & Wick
	Willimantic	Windham Community Hospital	Shreve, Lamb & Harmon
District of Columbia	Washington	Office Building—Acacia Life Association	Delano & Aldrich
	Washington	Post Office Department Building	Stone & Webster Engineering Corp.
	Washington	Potomac Electric Power Co. Building	Georgia Telephone Co.
Georgia	Lavonia	Repeater Station	Georgia Telephone Co.
	Winder	Repeater Station	Felix A. Burton
Greenland	Cape York	Memorial to Admiral Peary	Wadsworth & Boston
	Alfred	Courthouse	Nisbet & Griffin
Maine	Bangor	Armory (City of Bangor)	Edmund B. Gilchrist
	Ellsworth	City Hall and Fire Station	E. Leander Higgins
	Ellsworth	Masonic Temple	Edw. T. P. Graham
	Gardiner	Rectory, St. Joseph's Roman Catholic Church	T. G. O'Connell
	Lewiston	Cathedral—St. Peter and St. Paul	Little & Russell
	Orono	Gymnasium, University of Maine	Densmore, LeClear & Robbins
	Portland	New England Telephone & Telegraph Co.	Morse, Dickinson & Goodwin
	Amherst	Goodell Library	Perry, Shaw & Hepburn
	Andover	Dormitory—Phillips-Andover Academy	Prescott A. Hopkins
	Billerica	New England Telephone & Telegraph Co.	Coolidge, Shepley, Bulfinch & Abbott
Massachusetts	Boston	Home for Aged Women	Jas. H. Ritchie & Associates
	Boston	Pediatric Building, Boston City Hospital	Coolidge, Shepley, Bulfinch & Abbott
	Boston	Baker Clinic, Deaconess Hospital	Chas. R. Greco
	Boston	Addition—Joseph H. Barnes School	Densmore, LeClear & Robbins
	Bridgewater	New England Telephone & Telegraph Co.	R. Clipston Sturgis Associates
	Brookline	New England Telephone & Telegraph Co.	Coolidge, Shepley, Bulfinch & Abbott
	Cambridge	Harvard University, Astronomical Laboratory	Coolidge, Shepley, Bulfinch & Abbott
	Cambridge	Harvard University, Memorial Library	Coolidge, Shepley, Bulfinch & Abbott
	Cambridge	Harvard University, Jackson Hall	Coolidge, Shepley, Bulfinch & Abbott
	Cambridge	Harvard University, Appleton Chapel	Coolidge & Carlson
	Cambridge	Harvard University, Kirkland House	Coolidge & Carlson
	Cambridge	Massachusetts Institute of Technology, Physics and Chemistry Building	Densmore, LeClear & Robbins
	Cambridge	Massachusetts Institute of Technology, Spectroscopy Laboratory	Ralph Harrington Doane
	Cambridge	New England Telephone & Telegraph Co.	E. C. & G. C. Gardner & Frank W. S. King
	Cambridge	Rindge Technical High School	Ashton, Huntress & Alter
	Greenfield	Franklin County Courthouse	McLaughlin & Burr
	Lawrence	Y. W. C. A.	Wm. B. Colleary
	Medford	Grade School, Forest Park District	McLaughlin & Burr
	Milton	St. Mary's of the Hills Church	Gordon Robb
	Norfolk	Hospital Buildings	Chas. Z. Klauder
New Hampshire	Waltham	State Hospital	L. W. Briggs Co. & Frederick C. Hiron
	Wellesley	Wellesley College, Science Building	Maginnis & Walsh
	Worcester	War Memorial Auditorium	J. Edw. Richardson
	Worcester	Refectory, Holy Cross College	D. R. Baribault
	Center Strafford	Austin Cate Academy	J. Edward Richardson
	Concord	Sacred Heart Church	Wm. B. Colleary
	Dover	City Hall	Hendrick & Hayward
	Manchester	Church of the Blessed Sacrament	Fanning & Shaw
	Newport	New England Telephone & Telegraph Co.	Private Plans
	Bayonne	High School	Fanning & Shaw
New Jersey	Cartaret	WOR Radio Transmission Station	Voorhees, Gmelin & Walker
	Edgewater	Lever Bros. Building	Stone & Webster
	Englewood	Englewood Hospital Addition	Voorhees, Gmelin & Walker
	Hawthorne	Hawthorne High School	Fanning & Shaw
	Linden	Gin Distillery, Distillers, Inc.	Private Plans
	Morristown	St. Margaret's Church	Fanning & Shaw
	Newark	Hoffman Beverage Co. Building	Epble & Kahr
	Rahway	Administration Building, Merck & Co.	Ballinger Co.
	Brentwood	Hospital Building Number 5, Pilgrim State Hospital	State of New York
	Brooklyn	Jewish Sanitarium for Incurables	Tobias Goldstone
New York	Cobleskill	High School	Carl W. Clark
	New York	Bard Hall, Columbia University	James Gamble Rogers
	Oyster Bay	Mrs. Barker's Residence	Treanor & Fatio
	Poughkeepsie	Sports Stadium, Vassar College	Allen & Collins
	Scarsdale	High School	Rossiter & Muller
	Schroon Lake	Central Grade and High School	Carl W. Clark
	Shrub Oak	Wm. B. Osgood Field Residence	Cross & Cross
Pennsylvania	Chester	Scott Paper Co. Building	Stone & Webster Engineering Corp.
Rhode Island	Providence	Publishing Plant, Providence Journal Co.	Albert Kahn, Inc.

RIVERTON LIME & STONE COMPANY, INC.

MAIN OFFICE, QUARRIES AND KILNS
RIVERTON, VIRGINIA

FLAMINGO HYDRAULIC LIME PRODUCTS

"Flamingo" is the trade name applied to the easy-working, waterproofing and quick hardening *hydraulic* lime (which will set and harden even under water) produced by the RIVERTON LIME & STONE COMPANY, INC., at Riverton, Virginia.

Flamingo is manufactured by direct process from the *hydraulic* limestone from their own quarries, and their processes are protected by patent.

More than sixty years' experience in burning lime and twenty years' research and investigation stand behind the manufacturers of Flamingo Products and their guarantee.



They have been operating their quarries and kilns at Riverton continuously since 1871.

Hydraulic Lime is not a new product. It has been, and is being used as a masonry cement in all types of buildings in England and European countries. Buildings erected hundreds of years ago with *hydraulic* lime mortar demonstrate its permanence, its waterproofing qualities and its ability to resist the ravages of time.

There are three products, FLAMINGO FOR CONCRETE, FIBERED FLAMINGO and WATERPROOFED FLAMINGO FOR MASONRY MORTAR.

Flamingo for Concrete

Makes concrete more dense, workable, mobile and uniform and gives marked increase in strength. It reduces shrinkage and cracking, and is more resistant to weathering.

For watertight concrete add 11 lbs. of FLAMINGO FOR CONCRETE per bag of portland cement in a 1:2:4 mix (with a minimum of 5½ bags portland cement per cu. yd.) and take usual precautions regarding water used, thorough spading, etc.

Flamingo for Stucco

The latest development for modern stucco, as used on the Model Home of America at Atlantic City, N. J. It is plastic, permanent, economical and waterproofed.

For scratch coat on metal lath use 2 cu. ft. of sand to each bag of FIBERED FLAMINGO. For all other coats, use 3 cu. ft. of sand to each bag of WATERPROOFED FLAMINGO FOR MASONRY MORTAR.

WATERPROOFED FLAMINGO FOR MASONRY MORTAR

Flamingo is guaranteed to meet all the U. S. Government "Master Specifications for Masonry Cement." Number 443, Circular, Bureau of Standards Number 321, and all amendments and replacements, including "Federal Specifications for Masonry Cement" SS-C-181, January 6, 1931.

Prevents Leaky Walls and Dampness

The use of Flamingo does away with water seepage through the mortar joints, and puts an end to dampness on the inside walls. Modern research has demonstrated that, assuming good workmanship, leaky walls are due either to lack of proper bond or to cracks or fissures in the mortar itself, sometimes left when brick is laid in harsh, stiff working mortar, and often due to the expansion and contraction of the cementing material used in the mortar, after it has set. Flamingo is ground and milled so fine, and the mortar is so plastic and spreads so smoothly, that it sinks into the pores and adheres everywhere to the surface of the brick and fills every crevice in the joint, thus making so perfect a bond that water seepage between the brick and the mortar is wholly eliminated. *Furthermore (due to its composition), Flamingo is not subject to the extremes of contraction and expansion after it has set which often result in cracks and fissures found in many mortars.* FLAMINGO FOR MASONRY MORTAR contains a carefully proportioned amount of a standard waterproofing, which is ground in and further improves its waterproofing qualities. Flamingo mortar is watertight, and is for use below as well as above grade.

Strength

Flamingo mortar meets not only the standard building code strength requirements for the heaviest load-bearing walls, but those prescribed by the Bureau of Standards and the United States Government for the masonry cement used in Government buildings.

Flamingo mortar takes its initial set in from 2½ to 3½ hours, and its final set in from 6 to 8 hours, and progressively increases in strength until it is as hard as the brick itself.

Uniformity of Strength and Color

The color of Flamingo mortar is notably and consistently light and uniform. The architect and builder may be sure that uniformly sanded Flamingo mortar will be uniform in both strength and color at all times, and under all conditions. The natural color of Flamingo mortar approximates that of straight

lime mortar, modified and softened by the light cream tint of the neat Flamingo. Standard mineral mortar colors may be used if guaranteed by the manufacturers for use with cement and lime mortar, and added to the mortar as directed by the manufacturers. We are prepared to do this at the plant to your order.

Clean Joints and Perfect Bed

Because Flamingo strikes up "neat and slick" it gives a clean, firm, and neat joint. It is of a buttery consistency, and spreads so smoothly that perfect bedding is insured. It slides freely and works its way into all the crevices that cannot be reached with a trowel. Its notable fatness keeps the mass plastic during the process of laying the masonry unit.

Efflorescence

Numerous tests in laboratory and field have definitely proved that Flamingo *will not cause efflorescence*, and because of its waterproofing qualities it greatly reduces the tendency of efflorescence even in those brick high in soluble salts.

Mixing

The standard mix is 1 Flamingo to 3 sand, by volume; or 1 bag Flamingo to 3 cu. ft. of sand. Mix the sand and Flamingo thoroughly, add water and complete the mixing. The mortar is ready for use immediately.

How Packed

Flamingo is put up in 62½-lb., multiwall paper bags, containing 1 cu. ft. (plus) of material. Four bags to the barrel of 4 cu. ft. (plus) weighing 250 lb.

Where Obtainable

Flamingo can be procured from the RIVERTON LIME & STONE COMPANY, INC., Riverton, Virginia, through Building Material dealers, either from their stock, or on special order. If unable to secure through your dealer, write us; or wire us collect if in immediate need.

Typical Flamingo Jobs

Flamingo is approved and has been used on projects of the U. S. Treasury, Veterans' Bureau, War Department, Department of the Interior, etc. Large numbers of schools, hospitals and private buildings prove the high quality of WATERPROOFED FLAMINGO FOR MASONRY MORTAR.

Lists of projects on which Flamingo has been used, with the names of the architects and builders, will gladly be furnished.

SUPERIOR CEMENT CORPORATION

Manufacturers of Superior Cements
PORTSMOUTH, OHIO

SUPERIOR CEMENTS

Wifco Mortar Cement.
Tri-Cal High Early Strength Cement.

Superior Portland Cement.
Superior Waterproofed Portland Cement.

WIFCO MORTAR CEMENT

A Non-staining Cement for Both Stone and Brick Masonry

Wifco, in addition to being non-staining, has all the valuable strength characteristics of Portland cement together with the plasticity demanded by the mason. It is ground to uniform fineness and produces uniformly high strength. Due to this combination of high strength and excellent plasticity, Wifco may be selected with confidence for load-bearing walls. It has been in successful use for over eight years and has established a reputation for excellence throughout the building field. Wifco Mortar Cement is a quality product in every respect and its economy will be reflected not only in the cost of the material

itself, but in the excellent workability which it produces, insuring better workmanship and lower labor costs.

Wifco Features That Merit Your Consideration

Plasticity—For economy and quality.
Watertightness—For durability.
Non-staining—For stone masonry.
Strength—For speed and heavy loading.
Adhesion—For permanent bond.
Non-efflorescence—For permanence of color.
Uniformity—For beauty in architecture.
Colors—Wifco is furnished plain (a uniform light grey color) and in six colors.

Specifications and Tests

Economy—Repeated tests indicate that 800 to 1000 bricks are laid with the mortar from four sacks of Wifco.

Compression Strength—Strength in pounds per square inch based on a 1:3 mix by weight, using standard sand: 7 days—883 lbs., 28 days—1870 lbs.

Setting Time—Initial Set: 3 hours 3 minutes. Final Set: 10 hours 5 minutes.

Fineness—93% passing 200-mesh screen.

Non-staining—Wifco is classified as a non-staining cement as tested in accordance with methods established by the limestone industry.

Packages—Wifco is packed in multiwall paper bags, holding 75 lbs. net weight—approximately 1 cu. ft.

Specifications—Mix one part of Wifco Mortar Cement with three parts (by volume) of clean, well graded mortar sand which is free of any organic material. Add sufficient water for proper consistency.



Gallery of Fine Arts, Columbus, Ohio

RICHARDS, McCARTY & BULFORD, Architects

Wifco Mortar Cement was used in the construction of this beautiful building—a typical demonstration that it is an ideal, non-staining cement for use with Indiana limestone

TRI-CAL HIGH EARLY STRENGTH CEMENT

Tri-Cal, a rapid hardening Portland cement, was developed through extensive research work for a cement to meet the growing demand for speed in construction. It fully conforms to the tentative specifications for High Early Strength Portland Cement tentatively adopted by the American Society for Testing Materials (C74-30T). Tri-Cal is an outstanding product in the High Early Strength Cement field.

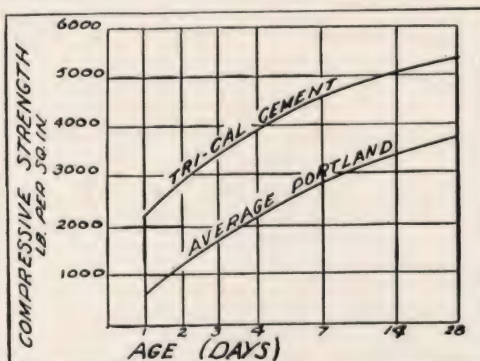
Tri-Cal Cement is manufactured under the most careful and scientific control to insure absolute uniformity. It is a true Portland cement containing no admixture or adulteration. It is ground to a high degree of fineness and produces dense impermeable concrete of exceptionally high strength at the early ages and better concrete at all ages. It has a high content of tricalcium silicate which is the influencing factor in its rapid hardening characteristics.

Characteristics

All of the useful properties of concrete may be attained with the use of Tri-Cal in much less time. Conditions being the same, mix for mix, the concrete strength usually produced with ordinary Portland cement at 7 days is now attained with Tri-Cal in from 24 to 36 hours; similarly, the strength usually produced with Portland cement in 28 days is attained with Tri-Cal in from 3 to 4 days.

TYPICAL PHYSICAL ANALYSIS

Initial Set Hrs. 1:45	Final Set Hrs. 3:25	Fineness Passing 200 M 98.
Tensile Strength		
(Lbs. per Sq. In.—1:3 Sand Mortar Briquettes)		
1-Day 315	3-Day 413	7-Day 489
Concrete		
28-Day 550		
Real Mix 1:4.3	Approx. Field Mix 1:2 1/4 : 2 3/4	Cement Sacks Cu. Yd. 5.3
Compressive Strength		
(Lbs. per Sq. In.—6x12-in. Cylinders)		
1-Day 2008	3-Day 3320	7-Day 4597
28-Day 4910		
Water Gals. per Sack 6		
Slump 3 in.		



Compression Tests of 6x12-in. Concrete Cylinders

Using one part cement to four parts of dry rodded aggregate. Mixing water 6 gal. per sack of cement (water ratio .80). Curves represent a typical concrete mixture

MEMORANDA

1. The first part of the memorandum is a general statement of the purpose of the study. It is a study of the effect of the new law on the business community. The second part of the memorandum is a description of the methods used in the study. The third part of the memorandum is a description of the results of the study. The fourth part of the memorandum is a conclusion. The fifth part of the memorandum is a list of references.

PECORA PAINT COMPANY, INC.

TELEPHONE
Regent 6130

Mortar Stains and Sash Putty
Fourth Street and Erie Avenue
PHILADELPHIA, PA.

ESTABLISHED 1862
By Smith Bowen

Products

PECORA MORTAR STAINS, PECORA METAL SASH AND CASEMENT PUTTIES, PECORA SUCTION PUTTIES, PECORA CALKING AND GLAZING COMPOUND, PECORA TRANSPARENT LIQUID WATERPROOFING COMPOUND.

Also Mill White, Enamels, Asbestos Furnace Cement, Stove Putty, Paints and Varnishes. Detailed information on request.

Pecora Mortar Stains

Uses—Made to be mixed with lime or cement mortar, or with the two combined, for facing exterior or interior brick walls regardless of the type of structure. Also for mantel facings, fireplaces and hearths of brick, tile, marble, slate, or other material, for pointing or joining stonework, and for introducing color tones into exterior "whitewash."

Properties and Advantages—Offered only in form of pulp or paste; manufactured from selected, finely ground ores combined with extenders and fixa-



Pecora
Dark
Brown
Mortar
Stain

tives making non-acid solution; "hoe in" with minimum handling and form strong chemical union with the mortar; produce tones that are rich, uniform, fade-proof; do not cause or increase efflorescence; economical.

Colors—Stock shades: Black, Brown, Dark Brown, Windsor, Red, Buff, Fern Green, Colonial Drab, Amber, Terra Cotta, French Gray. Special shades made to order.

Specifications—All mortar to be colored or stained with Pecora Mortar Stain, manufactured by PECORA PAINT COMPANY, INC., Philadelphia, Pa., using by measure 1 bucket of paste or pulp to 7 buckets of face wall mortar.

Mortar must be cold before mixing in stain. To secure a uniform and smooth shade, "hoe in" stain thoroughly. Keep soft in package by covering with water. Pour this off before using. Do not allow stain to freeze before mixing with mortar. **Note:** Depending upon depth of shade desired, the following proportions per 1000 brick, ordinary stretches, will be found to approximate quantity desired:

Red, Buff, Terra Cotta and Amber—For $\frac{1}{8}$ -in. joint use 45 to 55 lb.

Brown, Windsor, Colonial Drab, Fern Green, French Gray and Dark Brown—For $\frac{1}{8}$ -in. joint use 35 to 45 lb.

Black—For $\frac{1}{8}$ -in. joint use 20 to 30 lb.

Mortar varies and takes more or less stain according to richness of lime and quality of sand. Before laying brick it is suggested that a small portion of the stained mortar be taken from the mortar bed and dried out thoroughly to determine whether the proper quantity of stain is being used to produce the shade desired.



Pecora Metal Sash and Casement Putties

Manufactured in three grades to meet varying competitive conditions. They are easy to apply, work freely under the knife, set sufficiently on the surface for painting within a reasonable time and do not wrinkle, sag or form oil pockets. They dry readily by oxidation and will retain life through long period of most exacting conditions, due to vibration and expansion and contraction of metal and glass. Made of blended and processed oils, with first quality pigments and driers.

No. 100—Contains 100% linseed oil. Sets in approximately 48 hours, hardens throughout, yet retains elasticity. Recommended where highest type of glazing is necessary and cost is not a vital factor. Can be used successfully on wood sash also.

No. 70—Contains 70% linseed oil. Sets in approximately 24 hours. Price is attractive and putty will meet all around conditions.

No. 50—Contains 50% linseed oil. Sets in approximately 24 hours. Sets firm in joint, will not crack, creep or fall out. Will not harden in package. Popular for competitive work.

Note: When ordering, be sure to mention grade of putty desired.



Pecora
Black
Mortar
Stain

Casement Putty—Especially designed for glazing of casement type metal sash. Sets in 24 to 48 hours and remains elastic in final drying. Will not fall out, nor will it disintegrate under exposure to weather conditions during setting period. As casement sash is puttied on the outside, be sure to specify "Pecora Casement Putty."

Pecora Suction Putties

For use in erection of structural glass and other tile. Available in two types; one in grayish white and the other in black. The former, while quite sticky, is not difficult to handle and has been used extensively in connection with glass tile. Suitable for exterior and interior work and can be made in practically any color desired. In the erection of black tile, some contractors claim black putty more suitable—our Black Suction Putty has proved satisfactory in every respect. Details on request.

Pecora Klere-Seal Dampproofing Liquid

Made of a combination of best water-resisting and waterproofing materials known to present-day science.

Properties—A colorless, liquid compound, limpid as water and absolutely free of jelly or stringing; free-flowing, easy working and adaptable to brush or spray gun. Dries to a flat finish in 10 to 30 minutes depending on weather. Remains unchanged on long standing and under normal temperature conditions. Will not get white or thick in package, nor cause discoloration by whitening or grease on the surface to which it is applied. Estimated covering, average, about 200 sq. ft. per gal., using 2 coats, with greater or lesser coverage depending on porosity and other surface conditions.

Results—First, seals all pores against any penetration of dampness or moisture. Second, eliminates disintegration action of weathering, freezing and the accompanying cracking and chipping, retards absorption and discoloration by dirt, soot, dust and fading. Also checks efflorescence. Full particulars on request.

PECORA CALKING COMPOUND: KNIFE CONSISTENCY. GUN CONSISTENCY

Pecora Calking Compound

A plastic material, impervious to heat, cold and moisture, or acid fumes. When set, it forms a tough skin on the surface but remains permanently pliable and elastic underneath. It adheres tenaciously to wood, stone, terra cotta, concrete, iron, steel, glass or any other building material, while its permanent elasticity adjusts itself under all ordinary conditions to movements, due to expansion and contraction or warping of the surfaces it joins. It is made in two consistencies; knife grade and gun grade. The knife grade is about the consistency of putty and is easily applied with a putty knife or a hand calking tool. The gun grade is lighter in weight and is generally applied with a hand-calking gun. Stock colors are battleship gray and cream white. Other shades furnished if ordered in not less than 30-gal. lots of the gun calking, and quart cartridge for use in conjunction with our High Pressure Calking Gun; and 400-lb. to 500-lb. drums of the knife-calking compound. Gun grade put up in 1, 5, 10, 30, 55-gal. packages. Knife grade in 12½, 25, 50, 100, 500, 900-lb. packages.

Air Leakage Prevention:—It is used as a plastic filler for spaces between exterior window and door frames and the surrounding masonry to prevent the leakage of water, air and dust into a building from the outside and the leakage of warm air from the inside, thus reducing heating costs and other maintenance expenses. It is used on both new and old constructions. It is also used for calking joints in extending masonry members, such as cap stones, cornices, belt courses, water tables, balustrades, etc. This practical usage requires a material that will not stain the masonry, be it marble, limestone, granite, terra cotta, pre-cast stone or concrete. It will not run or melt, shrink or crack in extremes of temperature, caused by varying weather conditions. It adheres permanently to both sides of the joint, giving and taking with any movements due to contraction or expansion, thus making every joint so calked a permanent expansion joint. Pecora Calking Compound, whenever and wherever properly installed, has fulfilled all these requirements.

Application:—There are three recommended methods of application, viz:—(1) hand calking, (2) hand-gun calking, and (3) power-gun calking.

(1) A very satisfactory job can be done by a good conscientious mechanic, by forcing the compound into the joints with a hand tool, such as a putty knife, small trowel or calking key. For this method of application Pecora "Knife" consistency (sold by the pound) should be used.



(2) The High Pressure Cartridge Calking Gun is the newest method in use. If care is taken to force calking compound back into the joint (not merely laying a thin strip of it on top) a good calking job can be done. For this method of application Pecora "Gun" consistency (sold by the gallon) should be used.

(3) Power-gun calking (whereby the gun calking compound is forced into the joint under heavy pneumatic pressure) is recognized by all authorities as the most efficient method of calking. Installations done by this method will cost somewhat more because of the greater amount of calking compound that can be forced into any given depth of a joint, but on large construction projects many of the leading architects insist on this method of application, especially for the calking of masonry joints. Joints to be calked most efficiently should be at least ½ in. in width and preferably not less than ½ in. in depth. If wider than ½ in. or deeper than 2 in., these should be packed with calking cotton to within not less than ½ in. of the face surface and the remaining space should be filled with calking compound. Use of oakum for packing a joint (especially a masonry joint) should be avoided, as oils in the oakum are likely to stain stone.

All joints to be calked should be built up or cut out square down the sides (not V-shape), and they should be thoroughly cleaned of all dust, dirt and loose matter before the calking compound is forced in. Otherwise the calking compound cannot bond properly.

If the calking compound is to come in contact with material that is of a very porous nature, the joint should be brushed or sprayed with a coat of shellac that will close the pores, thus preventing undue "suction," which would have a tendency to lessen the life of the compound.

Suggested Calking Specifications

Materials and Methods:—Calking material shall be Pecora Calking Compound as manufactured by the Pecora Paint Co., of Philadelphia. (Specify color and consistency.)

Calking Wood Frames:—After staff beads have been removed by the carpenters, all exterior wooden window frames and wooden door frames shall have joints between wood and masonry (including at heads and sills) thoroughly air cleaned and calked, after which the staff beads shall be set in place by the carpenters. In all joints between wood frames and masonry, the calking compound shall be forced to a depth of at least ½ in. in spaces to be provided when frames are set (see "Masonry Work").

Calking Metal Frames:—All exterior metal frames for steel sash or for doors shall have joints between metal and masonry (including at heads and sills) thoroughly cleaned and calked. In all joints between steel frames and masonry, the calking compound shall be forced to a depth of at least ½ in. in spaces to be provided when frames are set (see "Masonry Work").

Masonry Work

Jointing of Terra Cotta and Masonry for Calking:—The joints of all copings, cornices, gutters, belt courses, base courses, or other projecting members as specified under "Calking" shall generally be not less in width or thickness than ½ in., unless otherwise shown or specified. The mortar of all such joints shall be kept back or raked out to a depth of not less than 1 in., nor more than 1½ in., and left ready to receive the calking compound as specified.

Calking Joints in Masonry and Terra Cotta:—Thoroughly clean and calk all open joints (see "Masonry Work") in copings, cornices, gutters, belt courses, base courses and any projections beyond the vertical wall whether in terra cotta, stone or other masonry materials. Joints to be calked shall be all those, whether horizontal or vertical, on tops, faces and soffits of all copings and of every projecting member, except vertical faces of base courses. The calking shall not be commenced until after the building is cleaned down and shall start at the top and be continued until completed.

(NOTE. If columns, pilasters or balusters are included in the design, the calking of same, including capitals and bases, should be separately referred to.)

Carpentry Work

Removing Staff Beads for Calking:—At the proper time remove staff beads (unless detailed for reception of calking) from all wooden window frames or wooden door frames to allow for calking as specified under "Calking" and after calking is completed, securely and neatly replace the staff beads and leave ready for painter to putty nail holes and complete painting.

Jointing of Window and Door Frames for Calking:—The mortar of all exterior joints between masonry and window or door frames, both wood and metal, shall be kept back or raked out to a depth of not less than ½ in. nor more than ¾ in., and left ready to receive the calking compound as specified under "Calking."



RICKETSON MINERAL COLOR WORKS

Manufacturers of Mortar, Cement and Plaster Colors

229 East Wisconsin Avenue, MILWAUKEE, WIS.

THE COMPANY



Dependability—RICKETSON MINERAL COLOR WORKS have been the makers of the highest grade of mortar color for more than 50 years. This has been fifty years of progress, in the development of better mortar colors. Ricketson colors have been used

in some of the largest and more important buildings in the United States.

As the oldest mortar color manufacturers in the country, we unhesitatingly stand back of our colors now so finely ground as to give the most effective coloring value.

A NEW PROCESS IN THE MANUFACTURE OF RICKETSON IMPROVED MORTAR COLORS

Our New Scientific "Air Floated" Process

Our new "air floated" process, and specially designed machinery will grind our ores to a velvety, "flour-like" fineness, greatly adding to their penetration and consequent coloring value. All trace of the unstable oxides is removed, leaving only those colors that will permanently resist every effect of weathering, without the slightest change. *They never fade.* The architect and builder who specifies Ricketson Mortar Colors is assuring himself that his work will remain as he left it so far as the mortar color is concerned.

There are other reasons why Ricketson Colors are extremely advantageous to use. Being absolutely pure coloring matter without filler or binder and insoluble in water, they never cake or deteriorate, no matter how long kept before using.

Their perfect purity and the impalpable fineness to which they are ground produce a number of desirable results. It makes them easy to obtain a perfect mix. It gives them greater coloring strength than most mortar colors on account of their high percentage of ferric oxide, so that they go farther, pound for pound. And it enables them to act as a filler for the materials with which they are mixed. Laboratory tests show that Ricketson Mortar Colors produce a stronger mortar or concrete aggregate.

Color

The drab, lifeless colors that gave anything but a cheerful aspect to the buildings of yesterday, have given way to new brilliance of hues for two very good reasons. First, the natural, human love for color. Second, man's new-found ability to provide color in architecture which successfully withstands the attack of sun and weather.

Today, not only wood and fabrics are beautified with enduring colors, but through the efforts of such specialists as the Ricketson corps of color craftsmen, even the stone beneath our feet, the adamant of the walls, and the everlasting masonry of the great skyscrapers are bathed in hues which will last for ages.

Regular Mortar Colors

Red, Brown, Light and Dark, Buff, Double Strength Chocolate, Green, Black. Odd tints may be made by the combination of various of the above colors.

Mortar Color Specifications

All Mortar Color used shall be lime, alkali and sun-proof, finely ground mineral Colors in dry form as manufactured by RICKETSON MINERAL COLOR WORKS, and shall be used in strict accordance with manufacturer's specifications. It is obviously difficult to lay down a set of rules or a mixing formula for the use of Mortar Colors as the width of the joint and depth of shade desired will really determine what amount of color should be used. For laying 1,000 brick from 75 lbs. to 125 lbs. of color should be used, depending on the color and the width of the joint.

Fundamental Rules—A few fundamental and never to be violated rules can, however, be set down, and include these:

First—If lump lime is used in place of hydrated lime, it must be thoroughly slaked and allowed to cool at least 24 hours before the color is added. Hot lime, or even warm lime, fades the best of colors.

Second—The dry colors should be mixed thoroughly with sand, hydrated lime and cement before the water is added. After the water is added the mixing should be continued until the mass is free from spots or streaks of color.

Third—Use mortar as thick as practicable. Do not use a "thin" mortar. Keep the different batches as near the same consistency as possible.

Fourth—Measure or weigh mortar color; do not guess. The first lot of color should be weighed, and after this has been done and the right shade secured, a measure holding that amount should be used for all subsequent batches of mortar. This is the only way in which a uniform shade can be secured. That the contractor may be sure of the shade, it is best to make up some sample panels before starting the job. Make the panels as thick as the finished wall and back them with mortar, so the drying will be under normal conditions. Mortar dries out lighter than it appears when wet.

Efflorescence—Is caused by the depositing of soluble salts on the wall surface after the water of solution has evaporated. These soluble salts may exist in the mortar used in laying up the stone or brick, or they may exist in the brick or stone. This efflorescence is not caused by the incorporation of mortar color into the mortar; it can and does occur when uncolored mortar is used.

For samples of colors see following page.

RICKETSON'S CEMENT AND PLASTER COLORS

Ricketson Cement Colors

For Stucco, Exteriors, Floors, Sidewalks, Driveways, Porches, Tennis Courts, Tile, Brick and all cement products.

Beautifying concrete with Ricketson's Cement Colors has won the popular acclaim among architects and contractors all over the country. Colored concrete is in vogue today, more than ever. Costs less than any other form of surface. Avoids painting, easy to keep clean, and will make an otherwise drab-looking concrete show life and pleasing effects. Ricketson's Cement Colors are known for their superior strength, color brilliance of tone, and absolute proof against heat, alkali or atmospheric conditions. Adds strength to the concrete and makes a harder surface.

How to Obtain Best Results

The following quantities of Cement Color are required for laying 100 sq. ft. of floor topping, one-half inch thick. Standard 1 to 2 mix.

Gray Portland Cement.....	2 sacks ($\frac{1}{2}$ bbl.)
Clean, Sharp Sand.....	4 cu. ft. (375 lbs.)
Ricketson's CP Cement Color.....	18 lbs.

For $\frac{3}{4}$ in. topping add 50% and 1 in. add 100% to above quantities. Establish mixture from samples built up under job conditions and allow to dry, because by this method you will know in advance what the job will look like when completed. Measure every ingredient in each batch of color mortar, including water.

Use 9 lbs. of Ricketson's Cement Color to each bag of Portland cement. Always use clean sand.

Final troweling should be done after concrete has stiffened; this assures a smooth, polished finish. Integral waterproofing hardener can be added to mix materials, also polishing or a surface treatment can be applied if necessary.

Ricketson's Plaster Colors

Make Your Own Colored Plaster and Stucco at a Saving of 40%—Now, with Ricketson's Plaster Colors, it is possible to produce the most modern tinted effects in plaster and stucco, inside the house and out and for all public buildings and institutions, at a cost that is not prohibitive.

The demand for color in and about the home is not a mere passing fancy. Those who have made a study of the subject

assure us that the use of color is not only here to stay but will increase as new methods and new economies are put into practice.

Ricketson's Plaster Colors solve a big problem. They make possible a more extensive use of colored plaster and stucco because of the saving they effect over the ready-colored plasters and over plaster that is tinted after being laid on.

Because of the purity and character of the materials which compose Ricketson's Colors, walls and other surfaces tinted with these colors retain their original beauty, as the colors are non-fading and weatherproof—You Can't Fade 'Em.

Ricketson's Colors become a part of the plaster itself. They are mixed in with the other ingredients when the plaster is mixed.

How to Obtain Best Results

Formula No. 1, Hard Finish:

Based on Average Mortar Box Capacity of 600 lbs.

Keene's Cement.....	125 lbs.
Finishing Lime.....	175 lbs.
White Silica Sand.....	300 lbs.
	600 lbs.

To above add 3 cans of Ricketson's Color.

Formula No. 2, Common Finish.

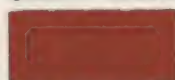
Hydrated Finish Lime.....	450 lbs.
Plaster of Paris.....	150 lbs.
	600 lbs.

To above add three 4-lb. cans of Ricketson's Color.

The above formulas are standard mixtures for permanent beautiful plasters and stuccos in homes, office buildings, churches and theatres. Six hundred pounds is the capacity of the average mortar box and requires three standard packages of Ricketson's Plaster Color to match the colors shown in this folder. For one-third this amount, use one can and to increase the size of the batch, increase all ingredients in proportion.

If you prefer, you can use your own formula; the same colors as those shown will result regardless of the formula used. Merely keep the proportion of one can of color to each 200 pounds of plaster. If stronger shades are desired, increase the amount of color. It is understood, of course, that the lime, gypsum, Keene's cement, sand and all ingredients other than the color should be as nearly white as obtainable.

CEMENT COLORS



No. 6 Red



No. 2 Yellow



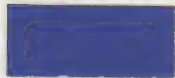
No. 9 Red



No. 100 Green



No. 8 Red



No. 10 Blue



No. 20 Brown



No. 50 Black

MORTAR COLORS



Double Strength Light Buff



Double Strength Dark Buff



Double Strength Brown



Double Strength Red



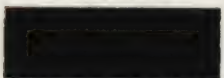
Special Green



Double Strength Chocolate



Standard Black



Double Strength Black

PLASTER COLORS



3004 Ivory



3007 Orchid



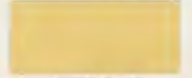
3001 Green



3005 Cream



3003 Blue



3006 Buff



3009 Rose



3010 Tan

**MASONRY
MATERIALS**
- SECTION -

3

CATALOGS 44 to 57

**CONSTRUCTION
ACCESSORIES**

DOUGLAS FIR PLYWOOD ASSOCIATION*

RESEARCH AND ADVERTISING HEADQUARTERS

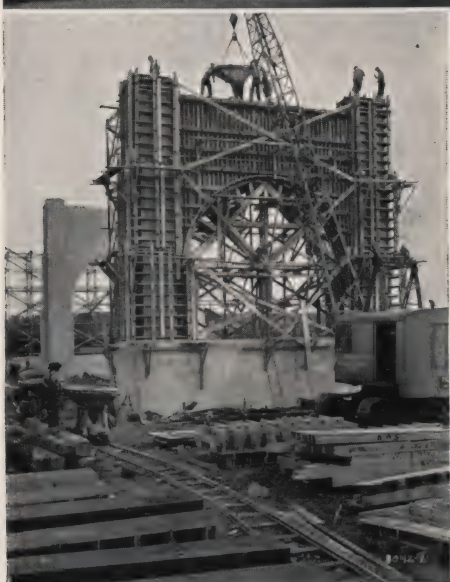
Sixth Floor, Skinner Building
SEATTLE, WASHINGTON

THE ASSOCIATION

A non-profit organization of all United States manufacturers of Douglas Fir Plywood, founded to sponsor a continuing program of technical research, to promote the use of this material in construction and industry, and to help users employ it to the best advantage.

Inquiries as to the characteristics or uses of Douglas Fir Plywood will receive the prompt attention of our Research Director. Address DOUGLAS FIR PLYWOOD ASSOCIATION, Research and Advertising Headquarters, Department 136-Z, Skinner Building, Seattle, Washington, or any of the member mills below.

The flawless surfaces on this Seattle factory were obtained with practically no rubbing, because the giant, tight-fitting plywood panels used as lumber-and-lining left no fins



Giant panels used over and over again as form material greatly lessen the labor costs on a job where identical forms are necessary

FOR SMOOTH FINLESS CONCRETE

Specify

DOUGLAS FIR PLYWOOD

One of the most important developments of recent years in concrete form construction is the new specially-fabricated-and-treated $\frac{5}{8}$ -in. Douglas Fir Plywood for forms. For catalog containing complete data on the use of Douglas Fir Plywood for Concrete Forms, Wallboard, Sub-flooring, Sheathing, Cabinet Lumber and other purposes, as well as general information and test data, see Index of this edition of SWEET's Catalog File (Architectural) or write to us.



The result is a striking example of the beautiful monolithic construction possible with the specially-fabricated-and-treated Douglas Fir Plywood for concrete forms

*MEMBER MILLS

ABERDEEN PLYWOOD COMPANY, Aberdeen, Wash.
AIRCRAFT PLYWOOD CORPORATION, Seattle, Wash.
BUFFELEN LUMBER & MFG. CO., Tacoma, Wash.
CAPITOL PLYWOOD CO., Olympia, Wash.
ELLIOTT BAY MILL COMPANY, Seattle, Wash.
HARBOR PLYWOOD CORPORATION, Hoquiam, Wash.
HENRY McCLEARY TIMBER CO., McCleary, Wash.
M & M PLYWOOD CORPORATION, Longview, Wash.

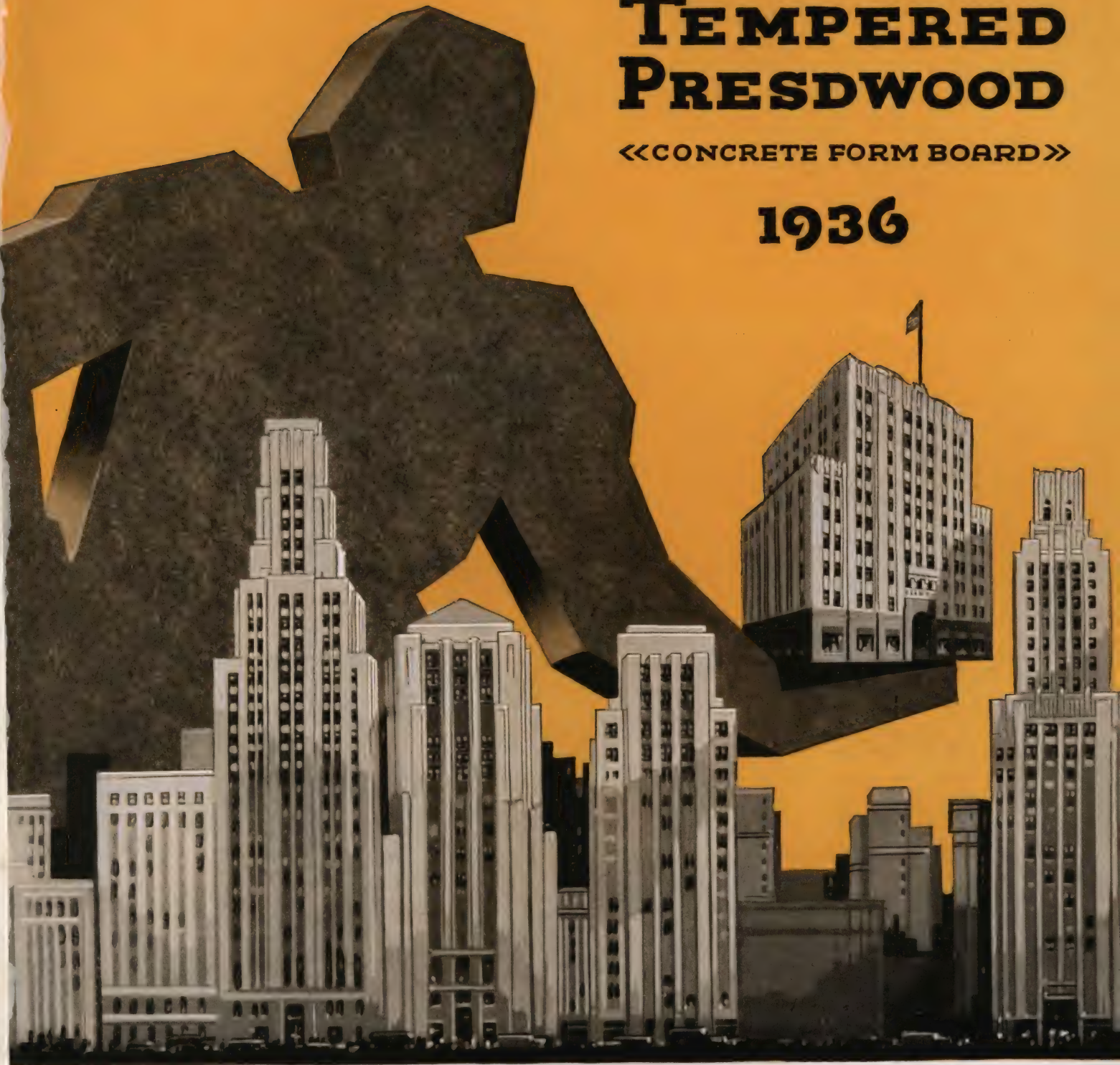
OLYMPIA VENEER COMPANY, INC., Olympia, Wash.
OREGON-WASHINGTON PLYWOOD CO., Tacoma, Wash.
PETERMAN MANUFACTURING CO., Tacoma, Wash.
THE PLYOCK CORPORATION, Portland, Ore.
ROBINSON MANUFACTURING CO., Everett, Wash.
VANCOUVER PLYWOOD & VENEER COMPANY, Vancouver, Wash.
WASHINGTON VENEER COMPANY, Olympia, Wash.
WHEELER OSGOOD SALES CORPORATION, Tacoma, Wash.

Genuine

MASONITE TEMPERED PRESDWOOD

«CONCRETE FORM BOARD»

1936



MASONITE *Corporation*
111 *W. Washington Street*, CHICAGO, ILLINOIS

MASONITE

Corporation

111 W. Washington Street,

CHICAGO—ILLINOIS.

FOR CATALOGUES ON MASONITE STRUCTURAL INSULATION See Sweet's File Index

MASONITE TEMPERED PRESWOOD (CONCRETE FORM BOARD)

Why You Should Specify It

Two requisite characteristics of concrete are strength and durability. To secure these characteristics, it is necessary that the concrete be thoroughly and completely hydrated. Perfect hydration can be obtained only when forms that retain the mixing-water and maintain the established water cement ratio during the early stages of curing, are used. Properly constructed forms of Masonite Tempered Preswood retain the

mixing-water, thereby insuring the complete and uniform hydration of the concrete mass during the early stages of curing.

Tempered Preswood forms not only insure better concrete, but also effect substantial economies, as there are numerous instances in which they have been reused upward of twenty times, and some cases in which they have been reused upward of thirty times.

An understanding of what Masonite Tempered Preswood is, will immediately explain why it serves so well in concrete form work.

INTRODUCTION

A Tried and Proved Material

The increasing demand and successful use of Masonite Preswood for the lining of concrete forms to economically produce smooth, finished, exposed concrete surfaces, led the Research and Development Department of the MASONITE CORPORATION to further develop and perfect this material to more particularly adapt it to this use.

This fine material, Tempered Preswood, should in no way be confused with the previously made board, still admirably adapted to many uses in building and other industries.

Tempered Preswood is much denser, less absorptive and of considerably greater structural strength than Standard Preswood.

To the long and favorably known unique qualities of Preswood have been added almost unbelievable new qualities of tough, wear-resisting ruggedness and strength.

Made of Exploded Wood

Masonite Tempered Preswood is a manufactured board, made entirely of wood fibres by the Mason Process (Patented).

No binders are added and no chemicals are used in its manufacture.

Clean wood chips (yellow pine) are exploded under high steam pressure. This first stage in the manufacturing process produces long cellulose fibres with their original strength unimpaired and the lignins or natural cementing constituent of the wood entirely retained. The exploding process is purely physical, not chemical, and there is no change in the wood except that it is torn apart into exceptionally long fibres.

These clean, long fibres are next thoroughly felted

together and compressed into boards 4 feet by 12 feet in steam heated, flat-bed hydraulic presses where they are subjected to tremendous pressure and at the same time to a temperature as high as 500° Fahr. In four ways the board thus produced is better than nature's own original material. It is both grainless and knotless, has greater moisture resistance and is much denser and tougher.

The compressed or finished boards (Masonite Preswood) are now treated or tempered by a patented process which adds unbelievably to their density, non-absorption, structural strength and toughness. The result is a board of absolute uniformity in thickness and physical properties. The face surface of the board is smooth and semi-polished and the back a screen-mesh-indented surface.

THE COMPANY *Manufacturing Facilities*

The MASONITE CORPORATION has been continuously in business since 1925. All of its products, "Masonite Insulation," "Quartrboard," "Preswood," the new "Tempered Preswood," and "Temprtile" are produced by the "Mason Process" of pure, clean wood fibre. All of the products are sold nationally through retail lumber merchants.

The Manufacturing Plant is located at Laurel, Miss., with an annual capacity of better than 200,000,000 square feet of its various insulation and hard board products. Reasonable stocks are always maintained at the factory to insure quick delivery for any size operation.

Form Designing Service

The MASONITE CORPORATION maintain a corps of competent engineers to assist in the design and erection supervision of economical concrete forming based on the use of Tempered Preswood.



Physical Characteristics of TEMPERED PRESWOOD

SIZE (AREA)

The boards are uniformly 4'x12'-0 $\frac{1}{8}$ " cut accurately rectangular in shape with smooth, sharp arrises.

THICKNESS

Form Liner Boards— $\frac{3}{16}$ in. thick.

Structural Form Boards— $\frac{1}{4}$ in. and $\frac{5}{16}$ in. thick.

WEIGHT

$\frac{3}{16}$ in. thick—1100 lbs. per thousand square feet.

$\frac{1}{4}$ in. thick—1400 lbs. per thousand square feet.

$\frac{5}{16}$ in. thick—1700 lbs. per thousand square feet.

SPECIFIC GRAVITY

The specific gravity of Tempered Presdwood is 1.08, which is greater than Northern Hard Maple.

STRUCTURAL STRENGTH

Tensile Strength per square inch.... 5,000 lbs.

Modulus of Rupture per square inch. 10,000 lbs.

Working stress per square inch..... 1,250 lbs.

Modulus of Elasticity..... 850,000 lbs.

NORTH EAST Y. M. C. A.
NOTE TWO WAY JOIST SYSTEM
USED ON THIS PART OF THE
BUILDING AND THE ADAPTA-
BILITY OF TEMPERED PRES-
WOOD TO THIS SYSTEM



NORTH EAST Y. M. C. A.
NOTE STRAIGHT ALIGNMENT
AND CLEAN EDGES OF THE CON-
CRETE JOIST. COMPARE THIS
SURFACE WITH THE FORE-
GROUND METAL PAN SURFACE



NORTH EAST Y. M. C. A. BUILDING
—DETROIT, MICH. ARCHITECTS:
SMITH, HINCHMAN & GRYLLS—
DETROIT. GEN. CONTRACTORS:
A. A. ALBRECHT CO.—DETROIT.
TEMPERED PRESWOOD USED AS
A FORM LINER ON ALL EXPOSED
SLABS, JOISTS AND COLUMNS

Advantages and Economics of MASONITE TEMPERED PRESWOOD

(Concrete Form Board)

FORM FINISHED CONCRETE— GENERAL ADAPTABILITY

Building Industry for years searched without success for a material wholly suitable for concrete form lining and structural forming which would leave the concrete surface in a smooth, finished condition without added labor and expense.

The development of Tempered Presdwood, a grainless, all-wood fibre board, has through actual use on practically every type of concrete structure, proven its entire practicability and adaptability for this purpose. Tempered Presdwood has all the advantages previously accredited to natural wood lumber with the elimination of all of its inherent disadvantages.

Smooth finished concrete surfaces, both for the interior and exterior, are obviously an economy and may be utilized in practically every type of construction where reinforced and mass concrete are adapted.

On the interior, Form Finished Concrete in columns, beams, girders and slabs forming ceilings requires no plastering or furred or suspended ceilings to cover up or make presentable the structural members. The finished concrete is practically ready for decorating when the forms are removed.

For subways, tunnels and similar construction, a dense, smooth concrete surface is provided.

For exterior exposed building foundations and walls, Form Finished Concrete devoid of the usual form lumber disfigurements, has infinite possibilities. This is particularly true in the case of bridge piers, bridges and viaducts. Tempered Presdwood has proven an ideal form surface for special-process exposed-aggregate concrete wall facings.

Tempered Presdwood boards may be formed to the average curves required for arches and vaults.



ELIMINATION OF FORM JOINTS, ETC.

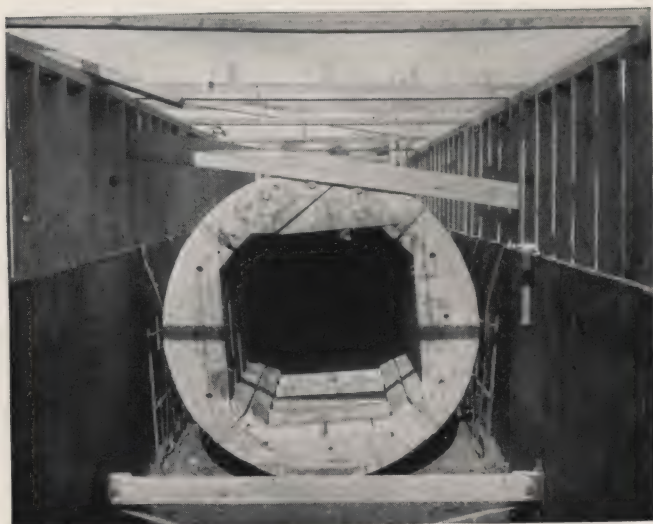
Due to the large area of the Tempered Presdwood units (4 ft. x 12 ft.), form joints, which would appear as disfiguring marks and fins on the concrete surface, are entirely eliminated.

Where joints between boards are necessary, they can be practically obliterated if ordinary care is exercised in cutting the boards and matching and securing the edges at the butt. (The manufactured edges of Tempered Presdwood boards are straight and square with sharp, true arrises.) No joint filler is required.

Much of the disfiguring form marks on exposed concrete in the past has been due to moisture absorption which has caused swelling, cupping and bulging of the individual boards of even

**KALAMAZOO OUTFALL
SEWER 6000 LINEAL FT. OF
MONOLITHIC CONCRETE
SEWER. 4' 6" INSIDE DIAM-
ETER. NO HORIZONTAL
JOINTS**

**OWNER: CITY OF KALA-
MAZOO, MICHIGAN
ENGINEERS & BUILDERS:
CITY ENGINEERING
DEPT. OF KALAMAZOO
INTERIOR FORM IN
PLACE. NOTE TEMPERED
PRESWOOD PARTIALLY
LINING EXTERIOR SKELE-
TON FRAME. IT HAD
BEEN USED 21 TIMES
WHEN PHOTOGRAPH
WAS TAKEN**



the most carefully built wood lumber forms.

Since Tempered Presdwood is practically non-absorptive, it remains flat and smooth even after repeated uses.

UNIFORMITY

Tempered Presdwood boards are absolutely uniform in surface finish, density and strength and are accurately cut to dimension.

The material is grainless and therefore has no tendency to split.

The fibres are uniformly compacted throughout the entire thickness—it is not laminated or stratified, therefore it will not separate or flake transversely.

LIGHT WEIGHT—EASILY HANDLED

While of great structural strength, the boards are thin ($\frac{3}{16}$, $\frac{1}{4}$ and $\frac{5}{16}$ in.) and weigh only 67.2 lbs. for

48 sq. ft. of $\frac{1}{4}$ in. Whether used as lining for wood forms or structurally spanning between wood supports, they are easy to handle and weigh less than any other material possessing comparable characteristics.

A SMOOTH FORM SURFACE

The face of Tempered Presdwood is smooth and has a semi-polished appearance. This is due to the smooth



chromium steel platens against which Presdwood is pressed when being made.

The tempering process fills the voids that may be in the surface of the board, increasing both its hardness and smoothness.

**ANOTHER VIEW OF KALA-
MAZOO OUTFALL SEWER
SHOWING SECTION OF
SEWER HAVING JUST BEEN
STRIPPED. NOTE COMPAR-
ATIVE SMOOTH SURFACE
OF INTERIOR LINING OF
SEWER. TEMPERED PRES-
WOOD USED 21 TIMES
WHEN THIS PHOTOGRAPH
WAS TAKEN**

RETAINS THE CORRECT WATER CEMENT RATIO

Forms lined with or built of Tempered Presdwood are tight and retain all of the pre-determined moisture within the forms assuring complete, uniform hydration of the cement and, therefore, better concrete.

The full strength of concrete designed by the water cement ratio method is secured.

There are few, if any, cracks or joints for the moisture to seep through and practically no moisture is absorbed by the form material.

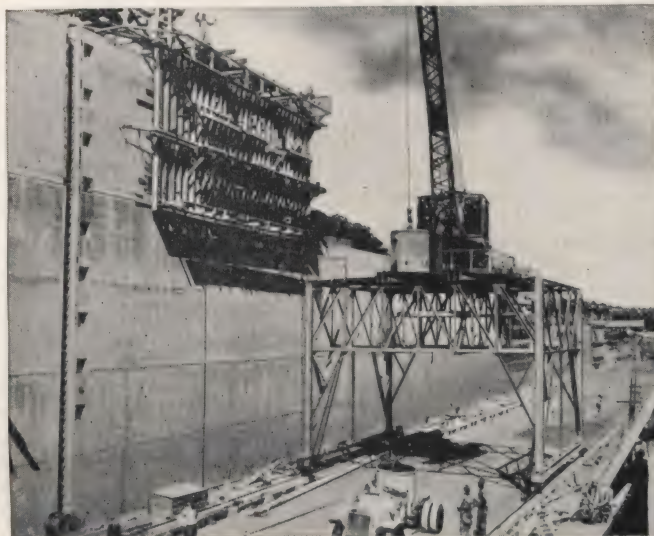
TEMPERED PRESWOOD ENDURES REPEATED USE

The greatest economy in forming may obviously be expected where the form units for floor arches or slabs, joists, beams, girders and columns are designed in sections for easy removal and repeated reuse on similar members. This is particularly so on floor constructions in multi-story buildings.



Column form size reductions on successive stories are easily accomplished with a minimum loss of material and labor.

Eight to twelve reuses of Tempered Presdwood in form units are frequently obtained when reasonable care is exercised in stripping, cleaning, storing, handling, and re-erecting. There have been jobs on which forms have been reused upward of thirty times.



SECTION SHOWING LOWER GUIDE WALL AT DAM No. 3

After the concrete has set sufficiently for form removal, Tempered Presdwood strips easily from the concrete surface.

Tempered Presdwood from large forms may be repeatedly cut down for use in smaller units.

On an average job, 5% is considered a generous allowance for wastage in cutting.

SAVES FORM LUMBER COSTS

Only sound square edged form lumber need be used in conjunction with Tempered Presdwood—dressed and matched material may be entirely eliminated.

Where Tempered Presdwood is used structurally the skeleton wood form bracing or backing may be so arranged as to require little, if any, cutting to length—the ends of alternate boards may be staggered and lapped.

Since the Tempered Presdwood largely prevents the seepage or loss of water from the concrete, the wood bracing or backing lumber remains in good condition (out of contact with moisture) and with ordinary care in stripping and handling, the salvage and reuse is very considerably increased.

Under average conditions 85% salvage of the supporting wood form lumber is not unusual.

WOOD ACCESSORIES FOR ARCHITECTURAL EFFECT

Where the design requires it, reverse wood moulding forms are easily and inexpensively added to Tem-

pered Presdwood forms to provide ceiling panels, beam and girder crown moulds, beam soffit chamfers and panels and column chamfers.

These accessories should be carefully fitted, particularly at miters and intersections and thoroughly oiled to reduce moisture absorption.

SAWING TEMPERED PRESWOOD

Tempered Presdwood, due to its density and grainless composition, is best cut with a power saw. The saw blade should be an 88-tooth, 14 inch diameter, 10 gauge, for straight saws and 8-13-8 gauge for mitre ground saws and such equipment will give the greatest efficiency for the longest period of time.

For cutting Tempered Presdwood the saw blade should be raised from one-half (1/2) inch to three-quarters (3/4) inch above the surface of the board. The pitch is considerably lengthened and is instrumental in speeding the

LOCK WALLS ON LOCK AT DAM NO. 3 TENNESSEE RIVER, CHATTANOOGA DISTRICT, WERE POURED IN FORMS LINED WITH GENUINE MASONITE TEMPERED PRESWOOD.



cutting of Tempered Presdwood Board.

TYPE OF CONCRETE REQUIRED

A uniform, extremely plastic concrete mix should always be used, well spaded to assure complete elimination of air and provide full contact with the form face. The whole mass should be puddled, agitated or vibrated by artificial means where concrete is closely confined in comparatively narrow members.

INSPECTION OF FORMS

The best of exposed concrete surfaces can be obtained by a minimum of added care and expense in form construction and mixing and placing of concrete. Finished forms should always be inspected to insure tight butted joints of the Tempered Presdwood and that the forms are cleaned of any foreign substance clinging to the surface.



MASTER SPECIFICATIONS

TEMPERED PRESWOOD

For CONCRETE FORMS

Note: Notes are explanatory or advisory only and are not to be included in the specifications.

Note: Select and include only those clauses which apply to the particular work. Words or clauses within brackets in italics are selective.

GENERAL REQUIREMENTS

(1) WORK INCLUDED

The following concrete surfaces shall be so executed that the exposed faces shall be "Form Finished," smooth and true, devoid of surface irregularities, disfigurement or markings without the necessity of rubbing, grinding, tooling or other mechanical finishing.

Note: Here list and locate all areas of "Form Finished Concrete." Contractor to take advantage of the structural strength of Tempered Preswood.

(2) FORM FACING MATERIAL

(2a) Forms for "Form Finished Concrete" shall be faced with Tempered Preswood as manufactured by the MASONITE CORPORATION, 111 W. Washington Street, Chicago, Illinois.

(2b) Boards shall be 4 ft. x 12 ft. in area with square-cut, straight edges and sharp arrises; $\frac{3}{16}$ in. for form lining and $\frac{1}{4}$ in. or $\frac{5}{16}$ in. thick for structural forms as best adapted to the particular type of concrete construction.

(3) APPLICATION OF TEMPERED PRESWOOD—GENERAL REQUIREMENTS

(3a) Tempered Preswood forms shall be so constructed that the smooth face of the board shall always be in contact with the finished or exposed face of the concrete.

(3b) Approximately 12 hours before applying the Preswood, thoroughly wet with water the screen side of the board. Stack the boards, screen side to screen side, in the pile before using.

(3c) Boards shall be so disposed and of such sizes as to eliminate all unnecessary joints between board areas.

(3d) All joints between boards shall be butted tight. Do not spring or force the boards in place.

(3e) The edges of Tempered Preswood boards, cut on the job, shall be straight, true and clean to produce a smooth, even edge where butted at joints.



MONTGOMERY WARD BUILDING, DENVER, COLORADO. EXPOSED FACE OF EXTERIOR WALL FORMS WERE LINED WITH TEMPERED PRESWOOD, TOUGH AND NON-WARPING, FOR "FORM FINISHED" CONCRETE REQUIRING NO TOOLING OR RUBBING AFTER FORM STRIPPING

(3f) All butt joints shall be rigidly supported for their full length to prevent movement.

(3g) All curved surfaces shall be formed accurately.

(3h) Tempered Preswood may be reused as many times as will provide a continuous, smooth surface.

(3i) Before each use, Tempered Preswood Forms shall be wiped with waste dipped in oil or grease having a calcium soap, aluminum stearate, or paraffin base oil having a viscosity of 145

or over, free from volatile constituents. These are obtainable under various trade names from Standard Oil Co., Shell Oil Co., Texas Oil Co., Gulf Refining Co., and other refiners. Do not use an excess of oil.

(4) WOOD ACCESSORIES

Wood accessories, such as reverse crown moulds, panel moulds, chamfers, etc. shall be accurately and smoothly milled to produce smooth finished concrete surfaces. They shall be so secured in conjunction with the Tempered Preswood form facing as to form unbroken lines with all joints, miters, etc. accurately and closely fitted. Wood accessories shall be well oiled with a good grade of form oil before use and shall be maintained in a fairly waterproof condition throughout the work.

(5) FORM LUMBER

Form lumber used in conjunction with Tempered Preswood form facing shall be sound material of sufficient size and so spaced as to adequately support the loads to be carried without deflection.

**(6) STRIPPING**

Care should be exercised in stripping the forms from the finished concrete that the Tempered Presdwood edges and face surfaces are not injured in any way to preclude their reuse.

(7) CLEANING AND CARE OF TEMPERED PRESWOOD

(7a) Tempered Presdwood forms when stripped from the concrete shall be set face up until dry.

(7b) Brush the face vigorously with a fibre scrubbing brush. Wipe the forms with waste dipped in oil or grease as specified in paragraph (3i). Do not use an excess amount of oil.

(7c) Tempered Presdwood boards when finally removed from forms at completion shall be carefully stacked face up for subsequent reuse. When dry clean the faces. Adequately protect the edges from injury or abuse. All nails shall be carefully backed out and removed before stacking. Tie wire, tie bolt or other holes which will deleteriously affect reuse, shall be patched and filled level with Rutland patching plaster sanded smooth. When dry coat with grease.

LINDEN BLVD. UNDERCROSSING,
LIVONIA AVE. YARD, NEW YORK
CITY. 1400 LINEAL FT. OF 19 FT.
HIGH WALL. 20 x 24 FT. PANEL,
LINED WITH ONE-QUARTER INCH
TEMPERED PRESWOOD, LIGHT-
WEIGHT PERMITTED TRANSPOR-
TATION AND EASY ERECTION. 25
REUSES OBTAINED

**(8) INSPECTION OF FORMS**

Immediately before placing concrete the forms shall be carefully inspected to make sure that they are properly braced, sufficiently rigid and thoroughly cleaned of any foreign matter in contact with or adhering to the Tempered Presdwood form face.

(9) CONCRETE CONSISTENCY

Wherever "Form Finished Concrete" is specified, provide an exceedingly plastic concrete to insure smooth finished surfaces free from honey-comb or similar defects.

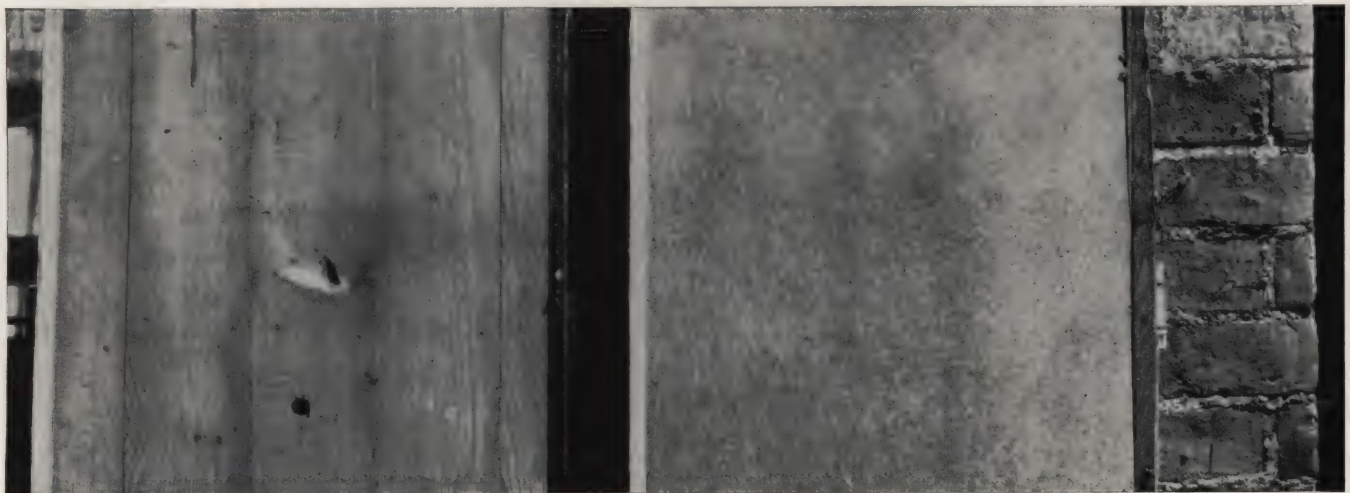
Note: Concrete should not be over sanded to produce plasticity.

**(10) PLACING CON-
CRETE**

(10a) All concrete placed in Tempered Presdwood forms should be well spaded at form sides to assure full and uniform contact with the form face. Use wood rod for spading.

(10b) Thoroughly rod, agitate or vibrate the concrete in closely confined form areas.

(10c) Mass concrete shall be thoroughly puddled.



THE ILLUSTRATION ABOVE IS FROM AN UNTOUCHED PHOTOGRAPH OF STRIPPED CONCRETE COLUMNS. THE COLUMN AT THE LEFT WAS FORMED WITH BETTER THAN AVERAGE STANDARD FORM LUMBER. THAT AT THE RIGHT WAS FORMED WITH MASONITE TEMPERED PRESWOOD FORMS. NOTE THE SMOOTH FINISHED SURFACE OF THE "FORM FINISHED CONCRETE" JUST AS IT APPEARS WHEN THE FORMS ARE STRIPPED



SHORT FORM SPECIFICATION

For CONCRETE FORMING

FORMS FOR EXPOSED CONCRETE

Forms for all exposed interior and exterior concrete surfaces, including concrete surfaces that are to be painted, shall be lined with Masonite Tempered Presdwood or Masonite Concrete Form Board as manufac-



VIEW OF BRIDGE TENDER HOUSE, DAMEN AVE. BRIDGE, CHICAGO, ILL. THREE-SIXTEENTHS INCH TEMPERED PRESWOOD LINERS USED TO FORM ALL CONCRETE SURFACES. NOTE ROUGH SURFACES OF RUBBED FOUNDATION AND ROUGH CONCRETE OF APPROACHES

tured by the Masonite Corporation, 111 W. Washington Street, Chicago, Illinois or equal, not less than $\frac{3}{16}$ in. thick with a hard, smooth surface on one side.

The fibre board shall be specially processed to resist moisture.

Boards shall be of sizes as large as practical so as to obtain a minimum number of joints.

They shall be applied to the wood form construction with the smooth side against the concrete, and nailed so as to secure them properly.

All joints shall be butted tight and shall bear on solid construction.

The entire installation shall provide for exposed concrete surfaces which will be practically free from join-marks, lumber grain marks, fins, depressions, or other defects which would not insure a continuous smooth surface.

Bevels shall be formed of smooth straight grained wood and shall be nailed through the fibre board and into the backing.

Before using and between reuses, the forms shall be wiped with waste dipped in oil or grease having a calcium soap, aluminum stearate or paraffin base oil having a viscosity of 145 or over, free from volatile constituents. These are obtainable under various trade names from many large refiners.

The board shall only be reused as many times as will insure such continuous smooth concrete finish.

Special care shall be taken in placing concrete against fibre board to insure the finished surface required.

The manufacturers' specification shall be considered a part of this specification and shall be consulted for further information or instructions.



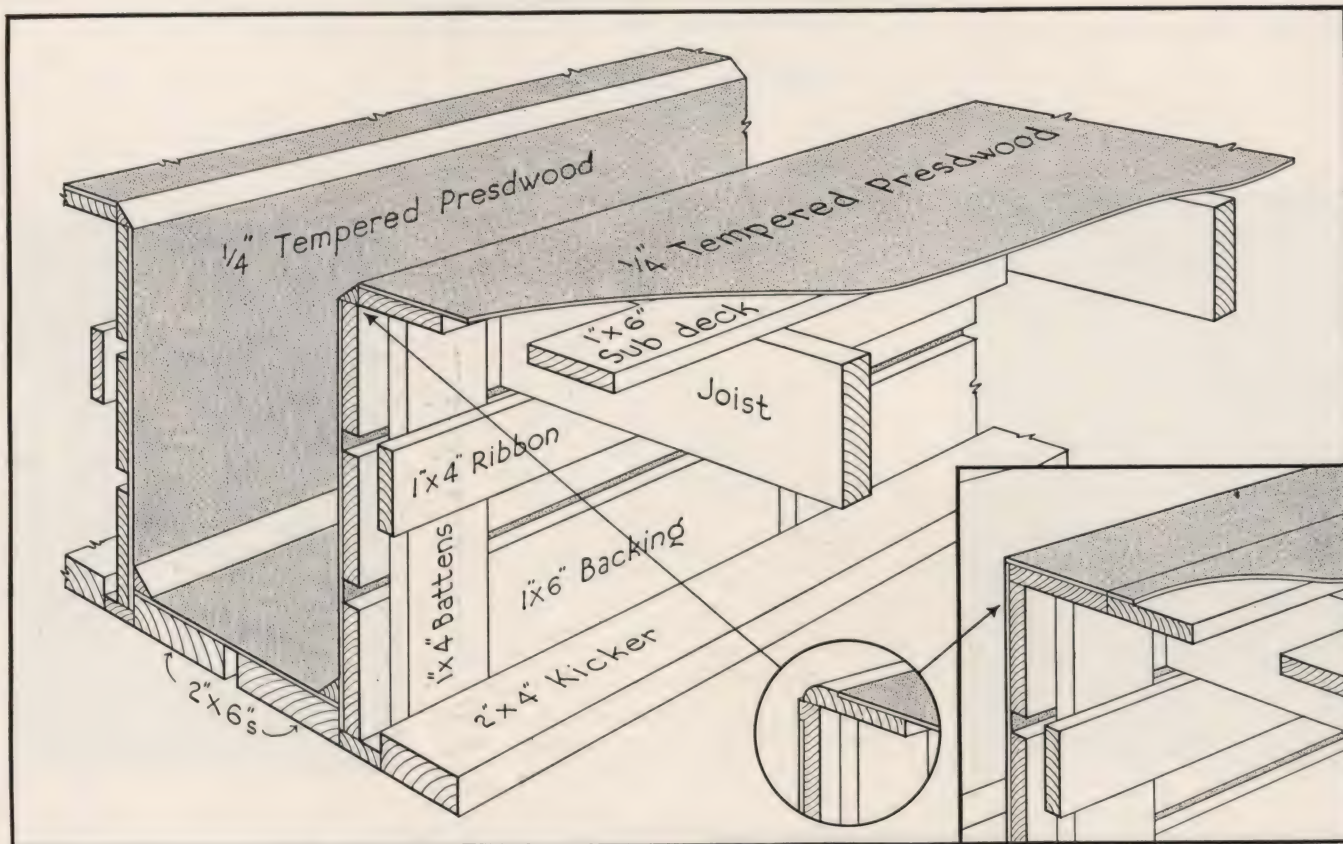
BALTIMORE ST. BRIDGE, BALTIMORE, MD. ENGINEER: H. L. LUCKE, CITY BRIDGE ENGINEER. CONTRACTORS: THE W. C. BRIDDEL CO., BALTIMORE

MASONITE TEMPERED PRESWOOD ONE-QUARTER INCH THICK USED TO LINE ARCHES AND SLABS. NOTE SMOOTH PRESWOOD LINER IN PLACE ON ARCH SOFFIT



CONCRETE BEAM AND SLAB FORM

USING $\frac{1}{4}$ " TEMPERED PRESWOOD STRUCTURALLY

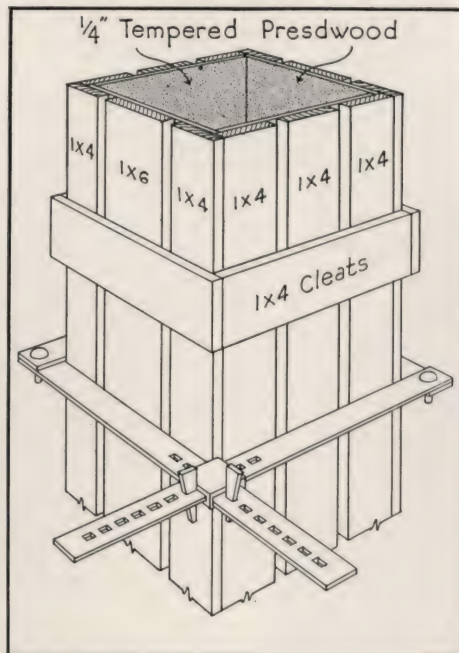


DAYTON BELL TELEPHONE BUILDING, DAYTON, OHIO. R. H. BLAGG, CONTRACTOR. SHENCH & WILLIAMS, ARCHITECTS. ALL COLUMNS, BEAMS, GIRDERS AND SLABS ARE EXPOSED CONCRETE. SURFACES PRODUCED WITH MASONITE TEMPERED PRESWOOD AND PAINTED



CONCRETE COLUMN FORM

USING $\frac{1}{4}$ " TEMPERED PRESWOOD STRUCTURALLY



At left—A typical column form in place.

At right—Concrete column with forms stripped. Note the uniform surface and sharp corners.



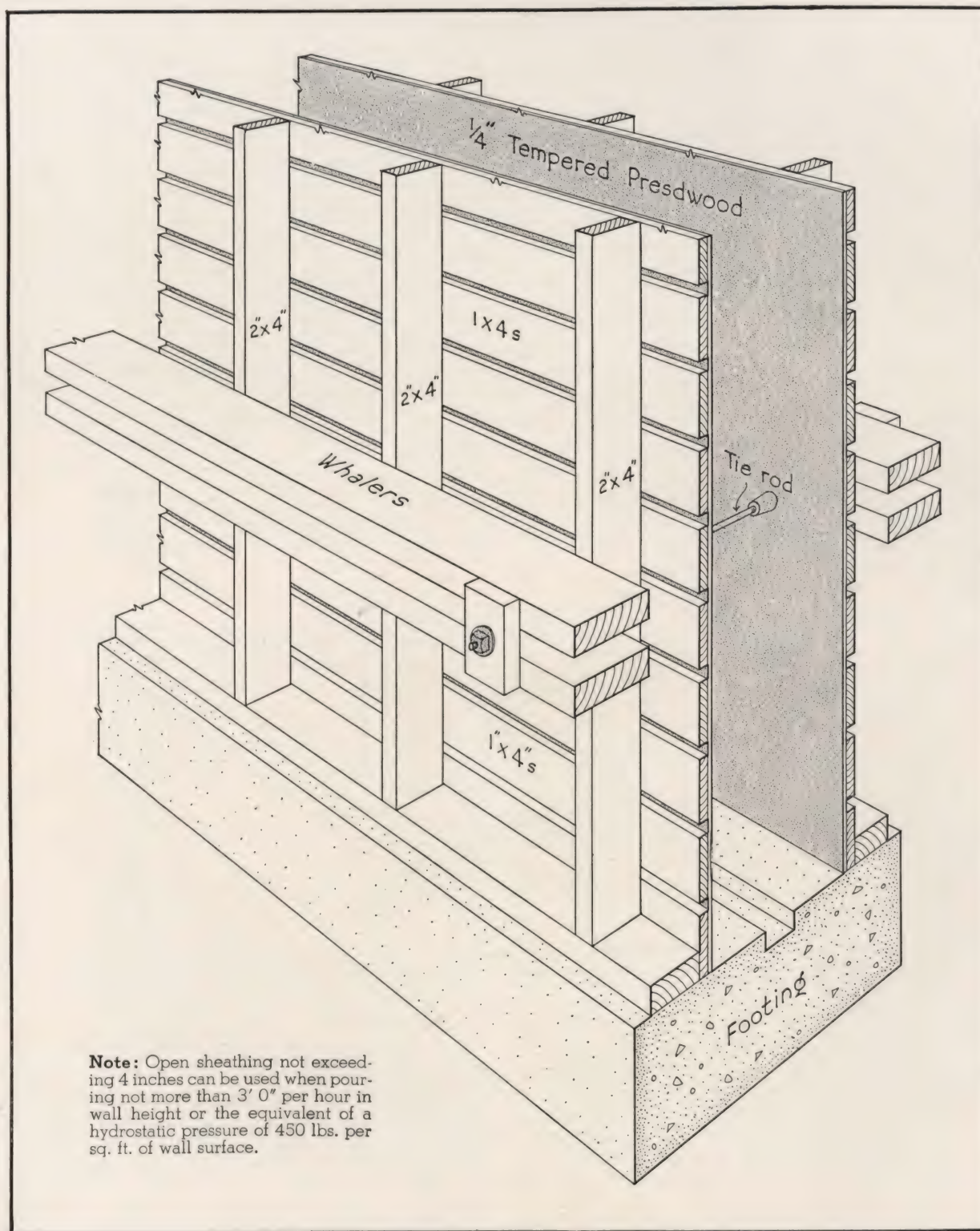
CADET BARRACKS, RANDOLPH FIELD, TEXAS
TEMPERED PRESWOOD USED TO LINE ALL FORMS FOR THE PORCH SLABS AND BEAMS. SURFACE MARKED OFF IN 4 x 4 FEET TILES

MARINE BARRACKS, U. S. GOVT. RESERVE, QUANTICO, VA.
INTERIOR AND EXTERIOR EXPOSED CONCRETE SURFACE FORMED WITH MASONITE TEMPERED PRESWOOD. NOTE THE PERFECT ALIGNMENT OF COLUMNS, BEAMS AND GIRDERS; ALSO THE UNIFORM SURFACES AND SHARP CORNERS



CONCRETE WALL FORM

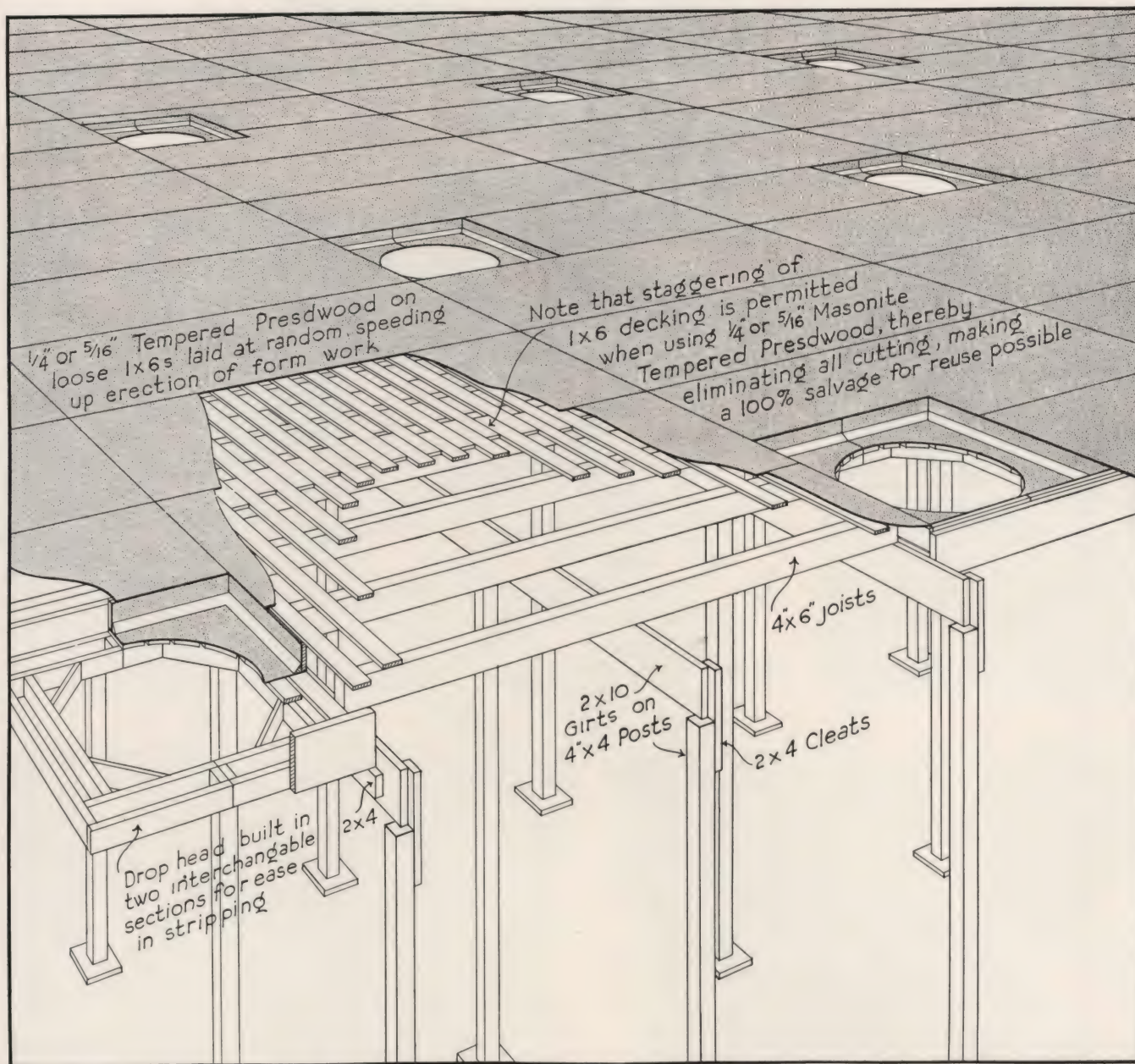
USING $\frac{1}{4}$ " TEMPERED PRESWOOD STRUCTURALLY



Note: Open sheathing not exceeding 4 inches can be used when pouring not more than 3' 0" per hour in wall height or the equivalent of a hydrostatic pressure of 450 lbs. per sq. ft. of wall surface.



FLAT SLAB CONSTRUCTION



TYPICAL EXAMPLE FOR THE USE OF DEFLECTION CHARTS

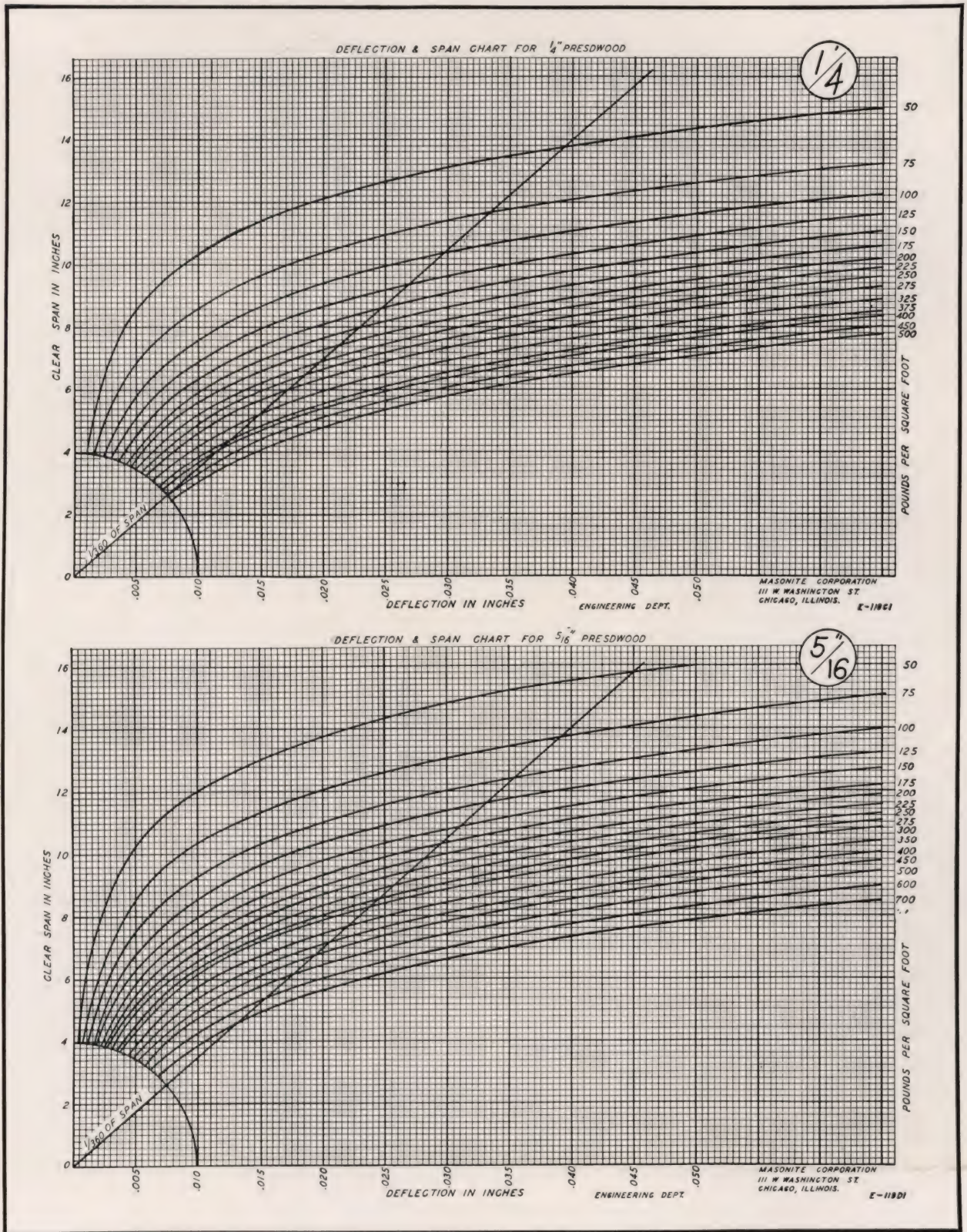
(See Charts on Opposite Page 12)

The Contractor has a solid 8-in. concrete slab floor to form. He wishes to know how far apart he can space his 1 x 4's or 1 x 6's to get within the allowable limits of deflection. Usually the allowable deflection limit for floors is 1/360th of the span. An 8-in. concrete slab floor weighs 100 pounds per sq. ft. of floor. Add to this a working stress of 75 pounds per square foot, making a total of 175-pound load that the Presdwood board must support, within the deflection limits.

On the stress diagram for 1/4-in. Tempered Presdwood, intersect line marked 1/360 of span and curve marked 175 pounds. From this intersection follow the horizontal line to the left margin and it will be found that the support spacing may be as great as 8 in. Refer to the diagram for 5/16-in. Presdwood; repeat the above operation and it will be found that supports may be spaced 10 1/4 in. Then determine which thickness of Presdwood will serve more economically.



DEFLECTION CHARTS FOR TEMPERED PRESWOOD

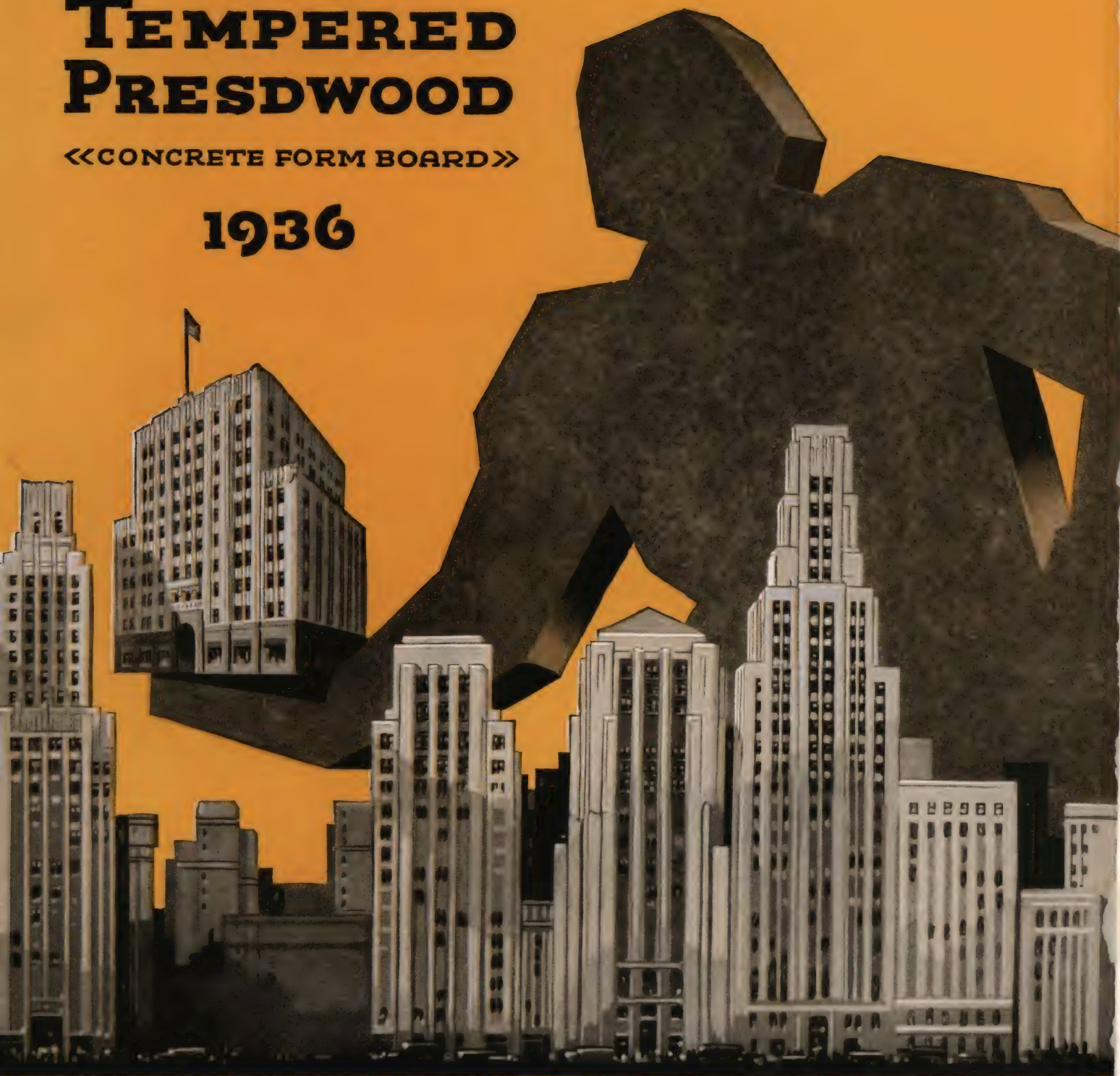


Genuine

MASONITE TEMPERED PRESDWOOD

«CONCRETE FORM BOARD»

1936



MASONITE *Corporation*
111 *W. Washington Street*, CHICAGO, ILLINOIS

AMERICAN STEEL & WIRE COMPANY

UNITED STATES STEEL CORPORATION SUBSIDIARY

CHICAGO, ILL.

For List of District Offices, see Our Electrical Wires and Cable Section

For our pages on Plaster-Stucco Reinforcement, Electrical Wires, and Cables and Wire Rope, see Manufacturers' Index

TRIANGLE MESH AND ELECTRICALLY WELDED WIRE FABRIC FOR CONCRETE REINFORCEMENT

Uses

Triangle Mesh and Electrically Welded Wire Fabrics are used for the reinforcing of concrete floor and roof slabs, concrete walls and chimneys, arch construction, beams, columns, dams and retaining walls, water, sewer and culvert pipe, pavements and roadways, river revetment, silos, fireproofing steel framing, bridge floors, reservoirs, monolithic concrete sewers and stucco work.

See following pages for specific suggestions.

Advantages of Wire Fabric Reinforcement

- (1) Provides even distribution of steel.
- (2) Reinforces in every direction.
- (3) Tension or carrying members accurately spaced.
- (4) Low cost of inspection.
- (5) Properly distributes over a large area stresses due to concentrated load.
- (6) Due to cold drawing, higher elastic limits with same quality of steel.
- (7) Continuous action from one end of the structure to the other.
- (8) Impossible to leave out or otherwise reduce the necessary steel if specific style number of fabric or area of steel is specified.
- (9) Perfect mechanical bond.
- (10) Easily handled and stored on the work.
- (11) Minimum cost of installation.
- (12) More bond area provided for equivalent steel area because of its small members closely spaced.

Grade of Steel

A reduction of the required sectional area of steel is safely accomplished, within limits, by the use of a higher yield point steel. This higher yield point may be secured by increasing the carbon content or by cold drawing of mild steel.

Cold drawing of mild steel produces a high ultimate strength and increases the yield point from 60% of the ultimate strength to approximately 90% of the ultimate strength. Since the strength of a reinforced concrete structure, in so far as the reinforcement is concerned, depends on the yield point of the steel, the high yield point of cold drawn wire is of great importance. A working stress of 28,000 lbs. per sq. in. is recommended where permitted by building codes.

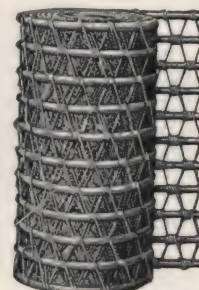
Triangle Mesh Woven Wire Concrete Reinforcement

Triangle Mesh Fabric is made from cold drawn mild steel having an ultimate strength of 70,000 to 85,000 lbs. per sq. in.

The longitudinal members are spaced 4 ins., diagonal cross wires either 2, 4, or 8 ins. It is the only design of wire fabric having cross wires that assist

the longitudinals in carrying the load.

The sizes of the wires and the number per longitudinal are varied to obtain the desired cross-sectional area of steel per foot of width. Stranded longitudinals are used to reduce the stiffness of the finished product without affecting the tensile strength.



Triangle Mesh Wire Fabric

TRIANGLE MESH WOVEN WIRE CONCRETE REINFORCEMENT

Style No.	Number and gauge of wires each, longitudinal, A. S. & W. Co.'s steel wire gauge	Sectional area longitudinal, sq. in. per ft. width	Effective sect. areas, sq. in. per ft. of fabric		Approx. weight, lb. per 100 sq. ft.
			Trans.	Longit.	
Longitudinals Spaced 4 In. Cross Wires No. 14 Gauge, Spaced 4 In.					
032	1—No. 12 gauge	.026	.022	.032	22
040	1—No. 11 gauge	.034	.022	.040	25
049	1—No. 10 gauge	.043	.022	.049	28
058	1—No. 9 gauge	.052	.022	.058	32
068	1—No. 8 gauge	.062	.022	.068	35
080	1—No. 7 gauge	.074	.022	.080	40
093	1—No. 6 gauge	.087	.022	.093	45
107	1—No. 5 gauge	.101	.022	.107	50
126	1—No. 4 gauge	.120	.022	.126	57
146	1—No. 3 gauge	.140	.022	.146	65
153	1— $\frac{1}{4}$ in.	.147	.022	.153	68
168	1—No. 2 gauge	.162	.022	.168	74
180	2—No. 6 gauge	.174	.022	.180	78
208	2—No. 5 gauge	.202	.022	.208	89
245	2—No. 4 gauge	.239	.022	.245	103
267	3—No. 6 gauge	.261	.022	.267	111
287	3—No. $5\frac{1}{2}$ gauge	.281	.022	.287	119
309	3—No. 5 gauge	.303	.022	.309	128
336	3—No. $4\frac{1}{2}$ gauge	.330	.022	.336	138
365	3—No. 4 gauge	.359	.022	.365	149
395	3—No. $3\frac{1}{2}$ gauge	.389	.022	.395	160

Longitudinals Spaced 4 In. Cross Wires No. 14 Gauge, Spaced 8 In.					
036P	1—No. 12 gauge	.026	.009	.036	17
044P	1—No. 11 gauge	.034	.009	.044	20
053P	1—No. 10 gauge	.043	.009	.053	24
062P	1—No. 9 gauge	.052	.009	.062	27
072P	1—No. 8 gauge	.062	.009	.072	31
084P	1—No. 7 gauge	.074	.009	.084	35
097P	1—No. 6 gauge	.087	.009	.097	40

Longitudinals Spaced 4 In. Cross Wires No. 12 $\frac{1}{2}$ Gauge, Spaced 8 In.					
041R	1—No. 12 gauge	.026	.014	.041	21
049R	1—No. 11 gauge	.034	.014	.049	24
058R	1—No. 10 gauge	.043	.014	.058	28
067R	1—No. 9 gauge	.052	.014	.067	31
077R	1—No. 8 gauge	.062	.014	.077	35
089R	1—No. 7 gauge	.074	.014	.089	40
102R	1—No. 6 gauge	.087	.014	.102	44

Longitudinals Spaced 4 In. Cross Wires Nos. 14 and 12 $\frac{1}{2}$ Gauge, Spaced 2 In. (This material is used principally for cement gun work)

Style No.	Number of wires each, longitudinal	Gauge of wires each, longitudinal	Gauge of cross wires	Approx. weight, lb. per 100 sq. ft.
7A	1	12	14	31
6A	1	10	14	37
5A	1	8	14	44
4A	1	6	14	53
29A	1	12	12 $\frac{1}{2}$	42
28A	1	10	12 $\frac{1}{2}$	48
27A	1	8	12 $\frac{1}{2}$	55
26A	1	6	12 $\frac{1}{2}$	64

Rolls: Standard lengths 150, 200 and 300 ft.

Widths: Approximately 16, 20, 24, 28, 32, 36, 40, 44, 48, 52 and 56 in.

Finish: Plain or galvanized.

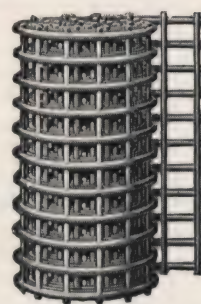
Tensile strength: Standard, 70,000 to 85,000 lb. per sq. in.

ELECTRICALLY WELDED WIRE FABRIC REINFORCEMENT

A square or rectangular mesh made from cold drawn steel wire electrically welded at the intersections of the transverse and longitudinal wires. Various combinations of spacings and sizes of wires can be furnished.

This material combines the same high quality of material and service that has given Triangle Mesh reinforcement its enviable reputation.

When embedded in concrete, this mesh yields the maximum of its steel strength.



Electrically Welded
Wire Fabric Rein-
forcement

AMERICAN ELECTRICALLY WELDED WIRE FABRIC REINFORCEMENT

Spacing of wires, in.		Gauge number		Sect. area, sq. in. per ft.		Weight per 100 sq. ft., lb.
Longit.	Trans.	Longit.	Trans.	Longit.	Trans.	
2	16	1	7	.377	.018	140
2	16	2	8	.325	.015	119
2	16	3	8	.280	.015	104
2	16	4	9	.239	.013	89
2	16	5	10	.202	.011	75
2	16	6	10	.174	.011	65
2	16	7	11	.148	.009	55
3	16	1	7	.252	.018	96
3	16	2	8	.216	.015	83
3	16	3	8	.187	.015	72
3	16	4	9	.159	.013	61
3	16	5	10	.135	.011	52
3	16	6	10	.116	.011	45
3	16	7	11	.098	.009	38
3	16	8	12	.082	.007	32
4	16	3	8	.140	.015	56
4	16	4	9	.120	.013	48
4	16	5	10	.101	.011	40
4	16	6	10	.087	.011	35
4	16	7	11	.074	.009	30
4	12	8	12	.062	.009	26
4	12	9	12	.052	.009	22
4	12	10	12	.043	.009	19
4	12	12	12	.026	.009	13
4	12	5	5	.101	.034	48
4	12	6	6	.087	.029	42
4	12	7	7	.074	.025	35
4	12	8	8	.062	.021	30
6	12	0	6	.148	.029	65
6	12	2	2	.108	.054	59
6	12	3	3	.093	.047	51
6	12	4	4	.080	.040	44
6	12	5	5	.067	.034	37
6	12	6	6	.058	.029	32
6	12	7	7	.049	.025	27
6	8	12	12	.017	.013	11

Spacing of wires, in.		Gauge number		Sect. area, sq. in. per ft.		Weight per 100 sq. ft., lb.
Longit.	Trans.	Longit.	Trans.	Longit.	Trans.	
6	6	0	0	.148	.148	107
6	6	1	1	.126	.126	91
6	6	2	2	.108	.108	78
6	6	3	3	.093	.093	68
6	6	4	4	.080	.080	58
6	6	5	5	.067	.067	49
6	6	6	6	.058	.058	42
6	6	7	7	.049	.049	36
6	6	8	8	.041	.041	30
6	6	9	9	.035	.035	25
6	6	10	10	.029	.029	21
6	6	12	12	.017	.017	13
4	4	4	4	.120	.120	85
4	4	6	6	.087	.087	62
4	4	8	8	.062	.062	44
4	4	10	10	.043	.043	31
4	4	12	12	.026	.026	19
4	4	14	14	.015	.015	11
3	3	10	10	.057	.057	41
3	3	12	12	.035	.035	25
2	2	10	10	.086	.086	60
2	2	12	12	.052	.052	37
2	2	14	14	.030	.030	21
2	4	12	12	.052	.026	28
2	4	14	14	.030	.015	16

Other styles can be furnished on application.

Rolls: Standard lengths 150, 200 and 300 ft. For No. 2 gauge wires and larger, flat sheets only.

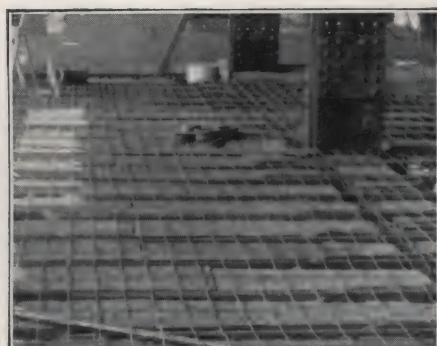
Widths: Multiples of the spacing of longitudinal wires up to a maximum width which varies with the size and spacing of the longitudinals. Approximate maximums 56 to 72 in. for 2-in. spacing, 84 to 96 in. for 3 or 4-in. spacing, and 96 to 120 in. for 6-in. spacing.

Finish: Plain or galvanized.

Tensile Strength: 70,000 to 80,000 lb. per sq. in.

Weights—All above weights are based on a width of 60 in. measured from center to center of the outside or selva longitudinal wires.

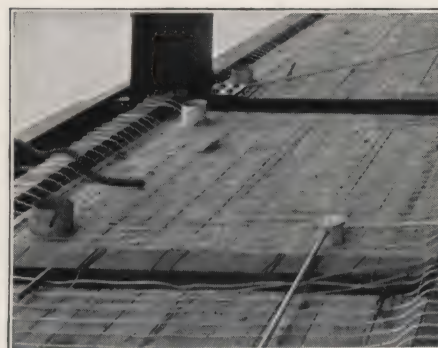
DETAIL VIEWS OF WIRE FABRIC REINFORCEMENT INSTALLATIONS IN THE WORLD'S LARGEST BUILDINGS



Wire Fabric as Shrinkage Reinforcement Over Metal Pan Concrete Joist Construction, as Used in the Merchandise Mart, Chicago, Ill.



Detail of Wire Fabric in Concrete Wall Construction, as Used in the New Post Office, Chicago, Ill.



Short Span Cinder Concrete Floor Construction—View of Wire Fabric as Used in Empire State Building, New York, N. Y.

SUGGESTIONS FOR USE OF WIRE FABRIC REINFORCEMENT IN BUILDINGS

Basement Floor Slabs

All basement floor slabs should be reinforced with wire fabric reinforcement. The style of mesh depends upon the thickness of slab used and condition of the supporting soil. For small residences and apartment buildings Style 032 Triangle Mesh or a 6x6-in. mesh No. 10 and No. 10 gauge welded fabric is commonly used. For slabs laid over filled land Style 080 Triangle Mesh or a 6x6-in. mesh No. 6 and No. 6 gauge welded fabric is often used. The U. S. Government Engineers specify 6x6-in. mesh No. 6 and No. 6 gauge welded fabric to reinforce basement floor slabs on slum clearance projects.

Sidewalks, Garage Driveways and Alleys

Almost all buildings constructed in the city or suburban areas have cement sidewalks on the property, and many will require cement driveways and alleys. In practically all cases the concrete slabs should be reinforced with wire fabric. Wire fabric will hold together all cracks that may form, thereby increasing the life of the cement slab. The usual style of fabric specified for sidewalks is Style 032 Triangle Mesh or a 6x6-in. mesh all No. 10 gauge welded wire fabric. For driveways and alleys Style 080 Triangle Mesh or 6x6-in. mesh No. 6 and No. 6 gauge welded wire fabric should be used.

Concrete Floor Filling

When concrete is used as a floor filling over concrete

slabs, tile arches, metal deck floors, etc., a wire fabric is usually used as shrinkage fabric. The U. S. Government Engineers specify a 4x4-in. mesh all No. 13 gauge wire fabric for shrinkage fabric in concrete floor fill.

Pan and Joist, Tile and Joist Construction

Wire fabric is commonly specified as shrinkage fabric with this type of construction. The usual fabric specified as a minimum shrinkage requirement is a 4x16-in. mesh No. 10 and No. 12 gauge wires.

Concrete Walls, Beam and Slab Construction

Wire fabric, when used in this type of construction, can be designed in accordance with the usual design formulas for reinforced concrete construction. A working stress of 28,000 lbs. per square (one-half the yield point of the material) is recommended. This is in accordance with the latest tests made on this material at the University of Delaware. Previous tests and data indicate that a much higher stress than this may be employed with the usual design formulas for spans up to 8 ft.

Fireproofing Columns and Beams Encased in Concrete

Cold drawn steel wire fabric is used almost exclusively to wrap columns and beams encased in concrete. A 4x4-in. mesh all No. 13 gauge welded fabric or Style 032 Triangle Mesh is the usual style of fabric employed.

SLAB REINFORCEMENT

Showing style of wire fabric for different floor loadings for spans up to 8 ft. in accordance with the empirical formula adopted in the New York City Building Code

STANDARD STYLES AMERICAN STEEL & WIRE COMPANY WIRE FABRIC REQUIRED FOR VARIOUS LOADS

Total Load per Sq. Ft. Including Weight of Slab	Span															
	4' 0"	4' 3"	4' 6"	4' 9"	5' 0"	5' 3"	5' 6"	5' 9"	6' 0"	6' 3"	6' 6"	6' 9"	7' 0"	7' 3"	7' 6"	8' 0"
Electric Welded Reinforcement—4-in. Cinder Concrete Slabs, 1-2-5 Mixture																
100 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
125 lb..	Gauge wire 10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12
150 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
175 lb..	Gauge wire 10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12
200 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
225 lb..	Gauge wire 10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12
250 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
275 lb..	Gauge wire 10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12
300 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
325 lb..	Gauge wire 10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12
350 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
375 lb..	Gauge wire 10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12
400 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
425 lb..	Gauge wire 10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12	10 & 12
450 lb..	Wire spacing in. 4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12	4 x 12
	Gauge wire 7 & 11	5 & 10	4 & 9	5 & 10	7 & 11	4 & 9	6 & 10	3 & 8	4 & 9	4 & 9	4 & 9	4 & 9	4 & 9	4 & 9	4 & 9	4 & 9

Triangle Mesh Reinforcement—4-in. Cinder Concrete Slabs, 1-2-5 Mixture

	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
100 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
125 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
150 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
175 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
200 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
225 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
250 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
275 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
300 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
325 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
350 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
375 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
400 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
425 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P
450 lb..	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P	053P

CONCRETE STEEL COMPANY

2 Park Avenue, NEW YORK, N. Y.

SALES OFFICES

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DETROIT, MICH.

PHILADELPHIA, PA.
ST. PAUL, MINN.

SYRACUSE, N. Y.
WASHINGTON, D. C.

WAREHOUSES AND FABRICATING WORKS

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DETROIT, MICH.

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ST. PAUL, MINN.
YOUNGSTOWN, OHIO

Products

CONCRETE REINFORCEMENT BARS; COLLAPSIBLE SPIRALS for column reinforcement; REMOVABLE METAL FORMS; CONCRETE INSERTS; CURB BARS; CONCRETE REINFORCEMENT ACCESSORIES, including SUPPORTING, SPACING and TYING DEVICES for holding bars in place in forms; WIRE DEVICES; WIRE SOFFIT CLIPS; WALL ANCHORS and TIES; EXPANDED METAL LATH (Plain and Self-furring); EXPANDED METAL REINFORCEMENT; HOT ROLLED and COLD FORMED CHANNELS; CORNER BEADS; RIB LATH; WIRE MESH; BAR MAT ROAD REINFORCEMENT; SANITREAD; STEEL JOISTS.



Concrete Reinforcement Bars

The Havemeyer deformed bar (Figs. 1 and 2) is rolled in square and round sections, with the deformations running longitudinally and entering directly into the tensile strength of the bar, no metal being used for the mechanical bond only. At all points it has a constant uniform area of cross section exactly



Fig. 1. Round



Fig. 2. Square

equal to the cross-sectional area of a plain bar of same size. As the projections and depressions are rolled longitudinally, there are no sharp angles to start a fracture when bar is bent.

Havemeyer bars are rolled to any desired standard specification from new billet steel. Complete stocks of Havemeyer bars, rolled to A.S.T.M. standard specifications A-15-35, are carried in all our warehouses.

We are also prepared to furnish rail steel deformed bars complying with A.S.T.M. specifications, Serial A-16-35, and maintain stocks of rail steel in some of our warehouses.

Shop Bending and Fabricating—Our warehouses are equipped for bending and fabricating bars. This service not only insures greater accuracy but is more economical for the contractor than if he did the work himself.

Collapsible Spirals

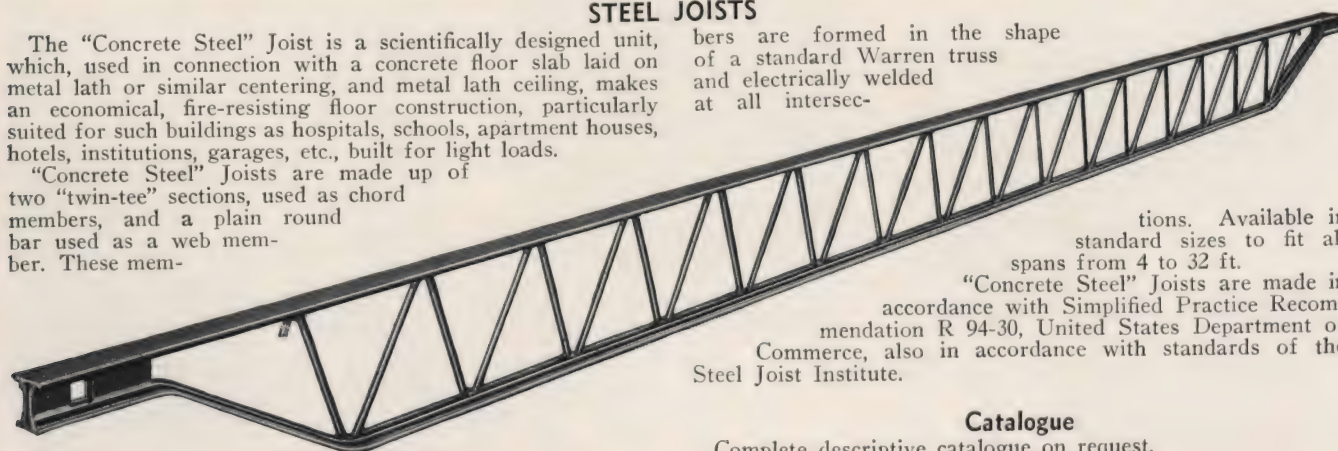
Accurately coiled, rigidly spaced and shipped collapsed, ready to be opened up and placed in the forms.

STEEL JOISTS

The "Concrete Steel" Joist is a scientifically designed unit, which, used in connection with a concrete floor slab laid on metal lath or similar centering, and metal lath ceiling, makes an economical, fire-resisting floor construction, particularly suited for such buildings as hospitals, schools, apartment houses, hotels, institutions, garages, etc., built for light loads.

"Concrete Steel" Joists are made up of two "twin-tee" sections, used as chord members, and a plain round bar used as a web member. These mem-

bers are formed in the shape of a standard Warren truss and electrically welded at all intersec-



tions. Available in standard sizes to fit all spans from 4 to 32 ft.

"Concrete Steel" Joists are made in accordance with Simplified Practice Recommendation R 94-30, United States Department of Commerce, also in accordance with standards of the Steel Joist Institute.

Catalogue

Complete descriptive catalogue on request.

Removable Metal Forms

Removable metal forms, in a wide range of dimensions, adapted to all types of buildings designed for concrete joists, are available to contractors on a rental basis.

Concrete Inserts

Dayton Adjustable-Inserts, with keyhole slot for adjustment; "Y" Socket-Inserts; Slotted-Inserts, unlimited adjustment obtainable.

Accessories for Supporting, Spacing and Tying Bars

Consist of Bar-Tys, Hy-Chairs, Ty-Chairs, Easel-Chairs, Sheet Metal and Welded Wire Bar-Spacers, Beam-Saddles and Separators.

These devices offer many decided advantages. Supporting devices keep bars at proper distance above the forms.

Wire Devices

Soffit clips; hanger wire, straight, cut and bent, toggle hangers, etc.

Our wire shops are prepared to manufacture, on short notice, any type of wire device required for the installation of suspended ceilings or for securing lath. Tie wire, staples, etc., carried in stock.

Fireproofing Products

Metal Lath—Flat expanded, flat rib, $\frac{3}{8}$ -in. rib, $\frac{1}{4}$ -in. rib and perforated sheet.

Furring—Hot rolled channels, angles and flats.

Cold rolled channels, $\frac{3}{4}$, 1, 1½ and 2 ins.

Corner Beads—Expanded, wing, scalloped edge, rail and bullnose types.

Lengths, 6, 7, 8, 9, 10 and 12 ft.

Base Beads—Expansion, plain and curved point.

Wire Mesh—Both triangle and electric weld, plain and galvanized, all standard weights and areas.

Expanded Metal—Complete information furnished on request.

Road Reinforcement, Curb Bars, Etc.

We furnish wire mesh, welded or clipped bar mat road reinforcing, together with all accessories for placing mats, joint construction, etc.; also cork, asphalt and other types of road joint.

Also round nose and angle nose curb bars for curb edge protection, stair nosings and platform edges; and Sanitread for safe, non-slip step surfaces.

THE CONSOLIDATED EXPANDED METAL COMPANIES

Steelcrete Concrete Reinforcing Mesh and Steelcrete Welded Wire Fabric

WHEELING, W. VA.

SALES OFFICES AND WAREHOUSES

BOSTON, MASS., 137 Washington Street,
Somerville
BUFFALO, N. Y., 505 Delaware Ave.
CHICAGO, ILL., 2531 Arthington Street

CLEVELAND, OHIO, 13107 St. Clair Avenue
HOUSTON, TEX., 4000 Clay Avenue

NEW YORK, N. Y., 35-12 Skillman Avenue,
Long Island City
PHILADELPHIA, PA., 1075 Germantown Avenue
PITTSBURGH, PA., 7637 Thomas Boulevard

FOREIGN SALES OFFICE, 330 West 42nd Street, NEW YORK, N. Y.

Products

STEELCRETE CONCRETE REINFORCING MESH, a diamond mesh fabric furnished in large, flat sheets.

STEELCRETE WELDED WIRE FABRIC.

For Steelcrete Safe-T-Mesh and Accessories for construction of door and window guards and protective panels, and Steelcrete Bank Vault Construction, see File Index.

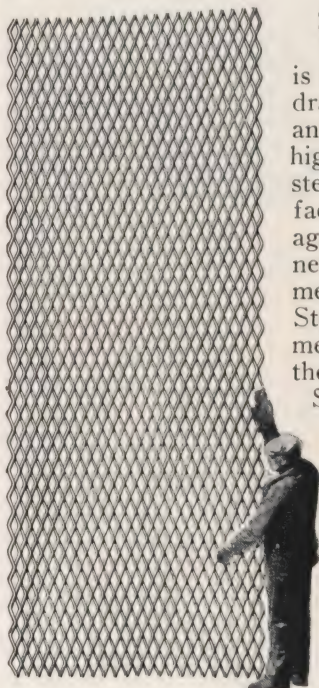
Steelcrete Service

Immediate shipments can be made from our plant at Beech Bottom, W. Va., or branch warehouses listed above.

STANDARDS FOR "STEELCRETE" EXPANDED METAL

Designation of mesh	Effective sectional area sq. in. per ft. width	Approx. weight per sq. ft., lb.	Standard width of sheets, ft.-in.	Standard length of sheets, ft.
3-13-075	.075	.25	6'-4"	8, 10, 12, 16
3-13-10	.10	.34	7'-0"	8, 10, 12, 16
3-13-125	.125	.42	5'-8"	8, 10, 12, 16
3-9-15	.15	.51	7'-0"	8, 10, 12, 16
3-9-175	.175	.60	6'-0"	8, 10, 12, 16
3-9-20	.20	.68	5'-3"	8, 10, 12, 16
3-9-25	.25	.85	4'-2 1/2"	8, 10, 12, 16
3-9-30	.30	1.02	7'-0"	8, 10, 12, 16
3-9-35	.35	1.19	6'-0"	8, 10, 12, 16
3-4-40	.40	1.36	4'-7"	8, 12, 16
3-4-45	.45	1.53	4'-1"	8, 12, 16
3-4-50	.50	1.70	7'-4"	8, 12, 16
3-4-55	.55	1.87	6'-8"	8, 12, 16
3-4-60	.60	2.04	6'-1 1/2"	8, 12, 16

Note: Sheets of special size furnished from the factory only. All the above sizes are furnished in a standard diamond 8 in. long and approximately 3 in. wide.



Large Flat Sheet of Steelcrete Reinforcing Mesh

Steelcrete Reinforcing Mesh

Steelcrete Reinforcing Mesh is a diamond mesh fabric, cold drawn from a solid steel plate and has an elastic limit 60% higher than commercial medium steel. In the process of manufacture every strand is tested against flaws and other weaknesses, assuring a uniform mesh of high elastic limit. Steelcrete Mesh is free from mechanical and welded joints, the fabric being one solid sheet.

Steelcrete Mesh provides two-way reinforcement, as well as the diagonal reinforcement, not ordinarily taken care of. It is furnished in large, flat sheets, suitable to all types of construction, easy to handle and costs less "in place" than many materials having considerably lower reinforcing values.

Steelcrete Mesh is espe-



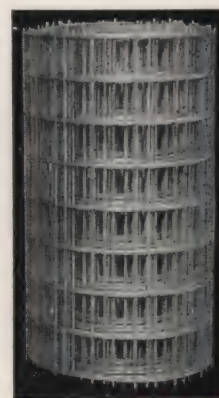
cially adapted for use in tunnels, tanks, sewers, culverts, retaining walls and concrete floors laid on the ground.

Specifications—The Steelcrete Mesh shall be laid on the forms with long way of the diamond meshes extending in the direction indicated on the drawings. The separate sheets shall be lapped one mesh on the side and one mesh on the end, and wired together at a sufficient number of points to hold sheets in position while depositing the concrete.

Steelcrete Welded Wire Fabric

This is an electrically welded wire fabric furnished in rolls or flat sheets in various gauges and spacing of wires. The wire is manufactured to A.S.T.M. specifications.

The following sizes and weights are always ready for 24-hour shipment from our branch warehouses listed above or our plant at Portsmouth, Ohio.



Steelcrete Welded Wire Fabric

SLAB OR ARCH REINFORCEMENT

In Rolls 48 In. Wide by 200 Ft. Long

Style	Wt. per 100 sq. ft.	Sec. area	
		Long	Trans.
4x12—10/12	19 lbs.	.043	.009
4x12—9/12	22 lbs.	.052	.009
4x12—8/12	26 lbs.	.062	.009
4x16—7/11	30 lbs.	.074	.009
4x16—6/10	35 lbs.	.087	.011
4x16—5/10	40 lbs.	.101	.011
4x16—4/9	48 lbs.	.120	.013
4x16—3/8	56 lbs.	.140	.015

TWO WAY REINFORCEMENT

In Rolls 60 In. Wide by 150 Ft. Long

Style	Wt. per 100 sq. ft.	Sec. area	
		Long	Trans.
6x6—12/12	13 lbs.	.017	.017
6x6—10/10	21 lbs.	.029	.029
6x6—9/9	25 lbs.	.035	.035
6x6—8/8	30 lbs.	.041	.041
6x6—6/6	42 lbs.	.058	.058
4x4—8/8	44 lbs.	.062	.062
6x6—5/5	49 lbs.	.067	.067

BEAM WRAPPER AND GUNITE REINFORCEMENT

In Rolls 48 In. Wide by 150 Ft. Long

Style	Wt. per 100 sq. ft.	Sec. area	
		Long	Trans.
2x2—14/14	21 lbs.	.030	.030
2x2—12/12	37 lbs.	.052	.052
2x2—10/10	60 lbs.	.086	.086

JOHNS-MANVILLE

EXECUTIVE OFFICES

22 East 40th Street, NEW YORK, N. Y.

Products

J-M STEELTEX FLOOR LATH and WELDED WIRE REINFORCEMENT for concrete building construction. (Other Steeltex products will be found in our catalog in the Metal Lath section of this edition.)

For the following Johns-Manville products, see File



Index: Acoustical Treatment and Sound Isolation; Asbestos and Asphalt Shingles; Built-up Roofs and Insulated Roofs; Home Insulation; Insulating Board and Lath; Pipe Coverings and Insulations; Tile Flooring; Transite, Flat and Corrugated; Asbestos Wainscoting and Flexboard.

J-M STEELTEX FLOOR LATH

J-M Steeltex Floor Lath is a combined form and reinforcing which offers important structural advantages and economies in light-slab concrete floor and roof construction. It will give maximum reinforcing value and facilitate proper curing of the concrete through the maintenance of the original water-cement ratio, at the same time effecting important savings in application costs and in the reduction of waste material.

The reinforcing element of Steeltex Floor Lath is composed of 12-gauge cold-drawn electrically welded galvanized steel wire reinforcing mesh. This mesh is attached to a tough corded backing—the form element—by means of crimp wires which also space the reinforcing mesh at the proper distance from the backing to permit the concrete completely to surround and embed the reinforcement. The weight of the poured concrete insures complete and uniform embedment without the labor of blocking up or of pouring the slab in two operations.

The Steeltex corded backing is of ample strength not only to support the concrete while it is being poured, but also to afford a safe walking surface once the fabric has been attached to the joists. Being water-resistant, the backing minimizes loss of water and fine aggregate through leakage, with a further advantage in the protection it affords to the floors below. Droppings are minimized, clean-up expense is eliminated, and work can proceed in safety even while the concrete is being placed.



Steeltex Floor Lath Has the Dual Feature of Making Forms Unnecessary and Providing Proper Reinforcing for Light Cement Floor or Roof Slabs



Underside View of a Steeltex Floor Lath Installation After the Concrete Has Been Poured

Note the absence of concrete drippings and of any sag between joists—two advantages that mean a worthwhile saving in concrete

tection it affords to the floors below. Droppings are minimized, clean-up expense is eliminated, and work can proceed in safety even while the concrete is being placed.

Advantages of Steeltex Method of Application

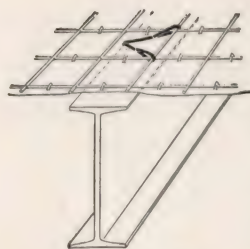
The laying of Steeltex Floor Lath is accomplished with a minimum of time and labor. Furnished in conveniently handled rolls 4 ft. wide by 125 ft. in length, the material is simply unrolled over the joists and cut to length. It is then attached to an end or anchored joist, drawn taut by means of the special Steeltex stretcher furnished for this purpose and fastened by clips to the intermediate joists.

The speed of work is also facilitated by the ability to cut necessary openings for pipes, etc., with snips or knife instead of saw, chisel and auger. Naturally, rolls can be more quickly laid per unit of area than can sheets, and with less wastage, since overlapping is minimized.

Properly installed, there is no excessive sag when concrete is being poured, which effects considerable saving. Also, because Steeltex Floor Lath extends in one piece across the entire panel or bay, it gives lateral stiffness, continuity of reinforcing and distribution of loads over a number of joists or beams.

The automatic embedding of the steel wire fabric in the concrete, coupled with its scientific design and spacing, provides maximum reinforcing value and promotes development of the full strength of the slab.

Equally Adaptable to Floors and Roofs



Steeltex Clips
Furnish a Secure
Hold

The advantages of Steeltex Floor Lath as a reinforcement and form for light-slab floor construction apply equally in the construction of concrete and gypsum roofs. The material is easily laid on sloping or curved roof surfaces and the fibrous backing is particularly adapted to roof construction since it helps check condensation on the underside of the slab, thus protecting the steel joists and beams and the plaster ceiling beneath.



Steeltex Floor Lath Is Applied by Unrolling the Material Across Joists
The roll form assures continuity of reinforcement across the entire panel, and provides, in one operation, both form and reinforcement



Roof Slab Being Poured Over Steeltex Floor Lath

Note how the lath adequately supports the weight of the four workmen and two wheelbarrows

TABLE OF SAFE LOADS FOR CONCRETE FLOOR SLABS USING STEELTEX FLOOR LATH

Values in table are Total Safe Loads in pounds per sq. ft. uniformly distributed, including Slab

Span of slab, inches	Size of Slab and Weight per square foot			
	2 in. (25 lbs.)	2½ in. (31 lbs.)	3 in. (38 lbs.)	3½ in. (44 lbs.)
18	436	586	736	886
20	353	475	597	718
22	292	392	494	594
24	245	330	415	499
26	209	281	353	426
28	180	242	305	366
30	157	211	266	319
32	139	186	234	281
34	123	165	207	248
36	109	146	184	222

Note: For partial continuity, i. e. $M = \frac{Wl^2}{10}$ take 5/6 of loads in table.

For simply supported, i. e. $M = \frac{Wl^2}{8}$ take 2/3 of loads in table.

For stress in steel other than 20,000, loads are directly proportional to stress, thus for 16,000, take 16/20 of load in table, for 18,000 take 18/20 of load in table, etc.

Specifications for J-M Steeltex Floor Lath

(Specifications for Reinforcing Concrete and Gypsum Floors and Roofs Over Steel Joists)

Before installing Steeltex Floor Lath, joists shall be rigidly bridged in accordance with Steel Joist Institute specifications.

Steeltex Floor Lath (a 3x4-in., 12-gauge, cold-drawn, electrically-welded, galvanized wire fabric, attached to a water-resistant backing, furnished in rolls 4 ft. x 125 ft.) shall be unrolled across the joists to the desired length from the outer or bearing walls of the building. Steeltex Floor Lath shall be fastened every 12 in. along the end joist with special clips.

Steeltex Floor Lath shall be stretched taut longitudinally across the joists by a special stretcher, and clipped securely every 12 in. along the bearing to which the stretcher is attached. Steeltex Floor Lath shall then be clipped to each joist every 24 in. on joists spaced 16 in. and over, and one clip or wedge per width of roll for joists spacing under 16 in. Each clip shall face in the opposite direction from the clip adjacent to it.

Where end laps are necessary, Steeltex Floor Lath shall be lapped at least 1 ft. directly over a joist. Side laps shall be not less than 2 in.

Note: Installation instructions and test information are available upon request at the nearest Johns-Manville Office.

See following page for Welded Wire Reinforcement

JOHNS-MANVILLE WELDED WIRE REINFORCEMENT

For general concrete building construction, but without the special features of Steeltex such as waterproof backing and self-furring, Johns-Manville supplies J-M Welded Wire Reinforcement.

This is more than ordinary "steel reinforcement." It is an electrically welded wire fabric of square or rectangular mesh, manufactured from a special high grade cold drawn steel wire of high tensile strength and proper ductile qualities.

This welding produces an absolutely rigid connection at every joint. Distortion of the fabric is thereby prevented, and since there are no wraps, ties or clips where the members are joined, the concrete is allowed to flow freely around all parts of the reinforcement and completely cover every wire. The result is a perfect bond between concrete and reinforcement.

The material is furnished in either plain or galvanized finish, in both rolls and sheets. The rolls are of such length as to provide an unbroken continuity of reinforcement extending across the entire width of most buildings. Full effectiveness of reinforcement is thus obtained at every section of the slab, while the almost complete absence of laps and splices reduces the required quantity of steel to a minimum.

A Type for Every Reinforcing Need

Practically any desired size of mesh and gauge of wire may be obtained in J-M Welded Wire Reinforcement. (See table of Standard Styles opposite.) This wide range of selection adapts the material to a multitude of uses, including reinforcement of all types of concrete floor slab construction, concrete driveways, sidewalks, retaining walls, etc.; beam and column wrapping;

fireproofing of steel framework; temperature reinforcement in top or finish layer of cement or composition floors, etc.

Finish—Plain or Galvanized as specified. (Plain fabric will be shipped on all unspecified orders.)

Tensile Strength—Wire used in all fabric will develop 70,000 lbs. per sq. in.

Widths—(Rolls or Sheets.) For 4-in. spacing of longitudinal wires, maximum width is 112 in. and is measured from center-to-center of outside longitudinal wires. For 3-in. and 6-in. spacing of longitudinal wires, maximum width is 60 in., with 139 in. possible in some styles, and is measured from center-to-center of outside longitudinal wires. All transverse wires will have close overhang ($\frac{1}{2}$ in. or less) unless otherwise specified.

Lengths—Rolls: Stock lengths 100 ft. to 300 ft. depending on style. Customer may specify length of rolls on orders not shipped from stock.

Sheets: No extra charge for sheets 6 ft. or over. Length of sheets to be specified by customer.



A Rigid Connection at Every Joint

The superiority of J-M Welded Wire Reinforcement lies in the electric weld which fuses the wires into one homogeneous section, assuring unimpaired strength and maintained wire spacing

DIMENSIONS, AREAS AND WEIGHTS

SUITABLE USES	Style	Spacing, inches		Gauge of wire		Sec. Area, sq. in. per lin. ft.		Weight per 100 sq. ft. lbs.
		Long.	Trans.	Long.	Trans.	Long.	Trans.	
Gunit, Composition Flooring, Fireproofing, Etc.	AA 1414	2	2	14	14	.030	.030	21
	AA 1212	2	2	12	12	.052	.052	37
	TT 1414	3	3	14	14	.020	.020	14
	TT 1212	3	3	12	12	.035	.035	25
	TT 1010	3	3	10	10	.057	.057	41
	BB 1414	4	4	14	14	.015	.015	11
	BB 1313	4	4	13	13	.020	.020	14
	BB 1212	4	4	12	12	.026	.026	19
Gunit, Waterproof Concrete Linings, Etc.	BB 1010	4	4	10	10	.043	.043	31
	BB 88	4	4	8	8	.062	.062	44
	BB 66	4	4	6	6	.087	.087	62
	BB 44	4	4	4	4	.120	.120	85
Temperature Reinforcing, Ground Floors, Etc.	CC 1212	6	6	12	12	.017	.017	13
	CC 1010	6	6	10	10	.029	.029	21
	CC 99	6	6	9	9	.035	.035	25
	CC 88	6	6	8	8	.041	.041	30
	CC 77	6	6	7	7	.049	.049	36
	CC 66	6	6	6	6	.058	.058	42
Slab Reinforcing, Etc. (One direction only)	AH 711	2	16	7	11	.148	.008	55
	AH 610	2	16	6	10	.174	.011	65
	AH 510	2	16	5	10	.202	.011	75
	AH 49	2	16	4	9	.239	.013	89
	AH 38	2	16	3	8	.280	.015	104
	TH 711	3	16	7	11	.098	.009	38
	TH 610	3	16	6	10	.116	.011	45
	TH 510	3	16	5	10	.135	.011	52
	TH 49	3	16	4	9	.160	.013	61
	TH 38	3	16	3	8	.187	.015	72
	TH 28	3	16	2	8	.217	.015	83
	TH 17	3	16	1	7	.252	.018	96
	TH 06	3	16	0	6	.295	.022	113
	BH 711	4	16	7	11	.074	.008	30
	BH 610	4	16	6	10	.087	.011	35
	BH 510	4	16	5	10	.101	.011	40
Beam Wrapping, Fireproofing, Etc.	BH 49	4	16	4	9	.120	.013	48
	BH 38	4	16	3	8	.140	.015	56
	BH 28	4	16	2	8	.162	.015	64
	BD 1313	4	8	13	13	.020	.010	11
Concrete Shapes, Etc.	BD 1214	4	8	12	14	.026	.008	12
	BD 1212	4	8	12	12	.026	.013	14
	BD 1112	4	8	11	12	.034	.013	17
	BD 1012	4	8	10	12	.043	.013	20
Slab Reinforcing, Driveways, Ramps, Etc.	BD 912	4	8	9	12	.052	.013	23
	BD 812	4	8	8	12	.062	.013	27
	BD 711	4	8	7	11	.074	.017	33
	BF 1012	4	12	10	12	.043	.009	19
	BF 912	4	12	9	12	.052	.009	22
	BF 812	4	12	8	12	.062	.009	26
	BF 711	4	12	7	11	.074	.011	31
	BF 610	4	12	6	10	.087	.014	37
	BF 510	4	12	5	10	.101	.014	42
	BF 49	4	12	4	9	.120	.017	50

Note: The "Style" letter and numerals refer respectively to the spacing of wires and to the gauge of wires; for instance, "BD" means 4-in. spacing of longitudinal wires and 8-in. spacing of transverse wires, and "1112" means No. 11 gauge longitudinal wires and No. 12 gauge transverse wire.



Floor and Column Reinforcing

KALMAN STEEL CORPORATION

SUBSIDIARY OF BETHLEHEM STEEL CORPORATION

Manufacturers of Concrete Reinforcement Products

GENERAL OFFICES
BETHLEHEM, PA.

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PACIFIC COAST DISTRIBUTOR: Pacific Coast Steel Corporation
SAN FRANCISCO, CAL. LOS ANGELES, CAL. SEATTLE, WASH. PORTLAND, ORE. SALT LAKE CITY, UTAH HONOLULU, T. H.
EXPORT DISTRIBUTOR: Bethlehem Steel Export Corporation, NEW YORK, N. Y.

Products

BETHLEHEM BARS for concrete reinforcement; WIRE FABRIC; COLUMN SPIRALS; REMOVABLE STEEL TILE; STEEL COLUMN FORMS; METAL LATH; Complete Line of ACCESSORY PRODUCTS—Bar Supports and Spacers, and Allied Products.

For Kalman Steel Joists, Expanded Steel Studs, and Steel Door Frames, see File Index.

Bethlehem Bars



For concrete reinforcement. Deformed bars rolled to standard specifications of billet steel, as illustrated above, or rail steel to section areas conforming to Simplified Practice Recommendation R-26-30 of the U. S. Department of Commerce.

Bethlehem Bars are branded for ready identification of size.

STANDARD SIZES BETHLEHEM BARS

Size	$\frac{3}{8}$ in. round	$\frac{1}{2}$ in. round	$\frac{1}{2}$ in. square equiv.	$\frac{5}{8}$ in. round	$\frac{3}{4}$ in. round	$\frac{7}{8}$ in. round	1 in. round	1 in. square equiv.	$1\frac{1}{8}$ in. square equiv.	$1\frac{1}{4}$ in. square equiv.
Area (sq. in.) . .	.11	.20	.25	.31	.44	.60	.79	1.00	1.27	1.56

Column Forms

Kalman Circular Steel Column Forms are highly efficient and economical. They possess points of definite superiority over square column forms. They provide a smooth and perfectly uniform column, free from "knobs," "bulging" and "necking in."

Built of 20-gauge sheet steel, Kalman Column Forms are light, convenient to handle, and flexible. Yet they are amply strong to stand up under the most severe conditions.

These forms are built to produce accurate contours and are notable for their strength and simplicity of detail. They are furnished to contractors on a lease-and-erection basis.

Complete information on request.



Column Spirals

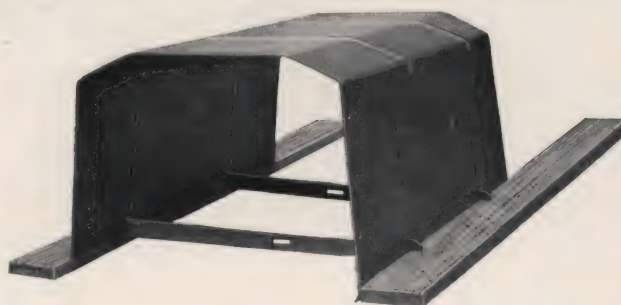
Spiral reinforcement for concrete columns furnished coiled to accurate diameter with spacers attached.

Collapsed for convenient handling.

Removable Steel Tile

For use as fillers or cores between the ribs of reinforced-concrete-joist floor and roof construction, Kalman offers steel tile of many advantages.

The tile is made of 16-gauge sheet steel with two ribs drawn in the top to provide stiffness. They are light and easy to handle. Two types are available:



(1) Spreader Tile, which make possible a decided saving in the erection of the wood centering; and (2) Nail-down Tile, which are preferred by some contractors.

Both types are furnished on a lease only or lease-and-erection basis.

Bar Supports and Spacers

Substantial devices for general use in accurate and economical setting of reinforcing steel. These products are standard in quality and performance for their purposes.

Accessory Products

Inserts and anchoring devices, usual in modern concrete construction, and an extensive line of products for use in erecting metal lath and related detail. See index for other products.

Engineering Service

Through all its offices, KALMAN STEEL CORPORATION offers expert assistance on matters of design and estimate of reinforced concrete structures, together with detailed advice concerning all Kalman products.

Folders and descriptive sheets are available on individual products, and will be supplied promptly on request.

JOSEPH T. RYERSON & SON, INC.

Reinforcing Steel, Steel Sheet Piling, Caisson Rings and Steel Products

GENERAL OFFICES
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REPRESENTATIVES IN
ROCKFORD, ILL.

KANSAS CITY, KAN.

MINNEAPOLIS, MINN.

ROCK ISLAND, ILL.

TULSA, OKLA.

Products

CONCRETE REINFORCING MATERIALS including Plain and Deformed Reinforcing Bars of either New Billet or Rail Steel, Column Spirals, Electric Welded Wire Mesh, Continuous Stirrups, Permanent or Removable Forms for Concrete Joist Construction, Bar Chairs, Bar Spacers, Bar Ties, etc., Metal Road Strips, and Expansion Joints, Bar Mats and accessories used in road construction.

EXPANDED METAL PRODUCTS and ACCESSORIES for concrete reinforcing and for safety guards, etc.

EXPANDED STEEL SHELF MESH, a perfectly flat, smooth expanded metal for shelving, grilles, register faces, and other applications where perforated sheets are commonly used.

These products are sold under the trade names of Ryex Expanded Metal, i.e., Ryex Industrial Mesh, Ryex Shelf Mesh, Ryex Grid Mesh, Ryex Reinforcing Mesh.

CAISSON RINGS for wood lagging in deep foundation construction.

All kinds of steel products including Bar Shapes, Structural, Rails, Plates, Sheets, Boiler Tubes and Fittings, Chains, Threaded Rods, Drift Pins, Bolts, Nails, Refined Iron, Stair Treads, Floor Plates, Allegheny Stainless, Alloy Steel, Tool Steel, Brass and Copper, Small Tools, etc. are carried in our ten steel-service plants. See the Ryerson Stock List for a complete description.

Reinforcing Bars

At our ten warehouse plants located throughout the country, we carry a complete stock of plain and deformed bars, both round and square. Bars rolled from new billet stock, conform to standard specifications of the American Society for Testing Materials, Serial Designation A-15-33.

Rail Steel bars conform to A.S.T.M. Specifications Serial A-16-33.



Ryerson New Billet Round Deformed Reinforcing Bar



Ryerson New Billet Square Deformed Reinforcing Bar



Shipping Bay in a Ryerson Plant
Reinforcing materials ready for loading

Bending and Fabricating

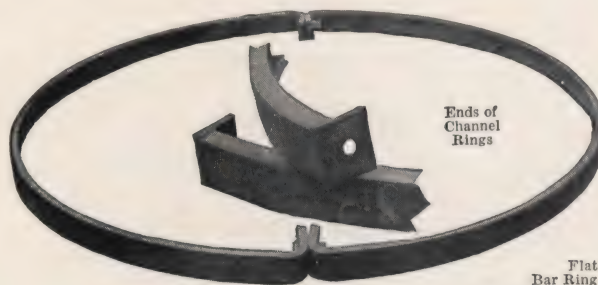
We have the most up-to-date machinery and other equipment for fabricating and can bend bars to any shape required for beam, joist and slab rods, stirrups, ties, hoops, etc.

Caisson Rings

We manufacture caisson rings rolled from flat bars with lugs formed by bending bar at right angles and punched for bolts.

We also make rings from standard channels with flanges of channels turned in. These rings have lugs made by welding bars at right angles to ends of channels. All welds are tested with a heavy sledge.

Channel rings are lighter, but more rigid than equivalent rings made from flat bars.



Ryerson Steel-Service

In addition to reinforcing materials we carry all kinds of steel products at each of our plants, thus giving the contractor a convenient source upon which to draw for such other steel as he may require on a job:

Bars, Shapes
Structurals, Rails
Shafting
Plates, Sheets
Rivets, Bolts
Chain, Wire
Corrugated Roofing and Siding

Turnbuckles
Safety Treads
Stair Treads
Floor Plates
Boiler Tubes and Fittings
Stainless Steel
Copper and Brass

Write for Stock List and Steel Data Book.

UNITED STATES GYPSUM COMPANY

300 West Adams Street, CHICAGO, ILL.

For Sales Offices, see File Index for USG Catalog on Roof, Floor and Partition Products

RED TOP EXPANDED METAL

(ECONO MESH)

Introductory

Red Top Expanded Metal (Econo Mesh) is a fabricated diamond mesh steel material of high elasticity manufactured by The UNITED STATES GYPSUM COMPANY at its Warren, Ohio, Steel Products Plant. Its diamond shaped meshes range from 3x8 in. down to $\frac{1}{2} \times 1\frac{1}{8}$ in. Engineer and contractor alike find definite advantages in using expanded metal as a reinforcement for the many forms of concrete slab work of moderate span and load, since the correct amount of reinforcing can be predetermined.

The smaller meshes present an ideal open mesh material for the construction of open partitions, window and door guards, elevator enclosures, machine guards, etc., and similar items that require a rigid open mesh material.

For Concrete Work

Red Top Expanded Metal offers marked advantages over reinforcing systems composed of tied or interlaced units. Some of its many advantages are: (1) Ease and rapidity with which it can be properly placed by unskilled workmen and with less supervision. (2) Lightens the designer's responsibility, because the correct amount of steel is determined at the time of manufacture, and cannot be altered by careless or ignorant workmen. (3) Provides a perfect bond, minimizing shocks, concentrated loading, etc., as stresses are evenly distributed over entire area. (4) Large, convenient size sheets, which lie flat without stretching.

The more popular reinforcing uses are for floor and roof slabs of moderate span and load, retaining walls, loading platforms, porch floors, culverts, sea walls, reservoirs, small bridges, tanks, foundations, columns, vaults, fireproofing, beam wrapping, etc.

For Open Partitions, Industrial Uses, etc.

Because it permits good visibility and has great rigidity, Red Top Expanded Metal is used extensively in many industries. It is particularly adaptable for the making of Open Partitions, Window and Door Guards, Machine Guards, etc. Its moderate cost, efficiency, durability and the ease with which it can be formed and framed commend it for this wide range of service. Red Top Expanded Metal can be framed with angle iron, U-edging, Red Top Frame Bar, or Red Top Partition Bar. These and other accessories are also furnished.

Some of its present uses in various industries are: Skylight guards, conveyor enclosures, elevator shaft and cage enclosures, fire door guards, mill trucks, trays and baskets, open shelving, ventilating fan enclosures, refuse burners, live stock pens, filter screens, truck body enclosures, stairway enclosures, brake shoe binder.

The UNITED STATES GYPSUM COMPANY does not manufacture partitions, guards, etc. Its interest is confined to the

distribution of the necessary materials for their construction, together with any advisory service that can be rendered. Names of reliable fabricators will also be furnished to those who prefer to have their safety and industrial devices built for them. Interesting descriptive literature on the many industrial uses for Red Top Expanded Metal is also available.

Shelf-X, Flattened Expanded Metal

Except for the fact that it has the advantage of a flat surface, Shelf-X has the strength, rigidity, workability, and economy features of Red Top Expanded Metal. It is widely used for shelving purposes and many others uses requiring a rigid open mesh material. Some Shelf-X uses are: refrigerator shelves, cabinet shelves, stove grilles, ventilating grilles, drying trays, display panels. Can be had in $\frac{1}{2}$, $\frac{3}{4}$, and $1\frac{1}{2}$ inch meshes cut from 13, 16, and 18 gauge steel.

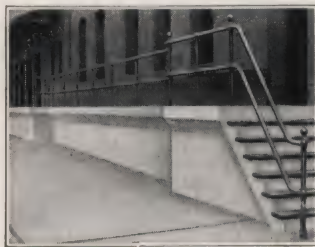
STOCK SIZES AND WEIGHTS OF EXPANDED METAL

Style Numbers	Size of mesh, in.	U. S. std. gauge number	Sq. inch sect. area per foot of width	Weight lbs. per sq. ft.	Width short way of mesh	Length long way of mesh feet
Mesher for Reinforcing Concrete						
3-13-075	3 x 8	13	.075	.25	6' 4"	8, 10, 12, 16
3-13-10	3 x 8	13	.10	.34	7' 0"	8, 10, 12, 16
3-13-125	3 x 8	13	.125	.42	5' 8"	8, 10, 12, 16
3-9-15	3 x 8	9	.15	.51	7' 0"	8, 10, 12, 16
3-9-175	3 x 8	9	.175	.60	6' 0"	8, 10, 12, 16
3-9-20	3 x 8	9	.20	.68	5' 3"	8, 10, 12, 16
3-9-25	3 x 8	9	.25	.85	4' 2 $\frac{1}{2}$ "	8, 10, 12, 16
3-9-30	3 x 8	9	.30	1.02	7' 0"	8, 10, 12, 16
3-9-35	3 x 8	9	.35	1.19	6' 0"	8, 10, 12, 16
3-4-40	3 x 8	4	.40	1.36	4' 7"	8, 12, 16
3-4-45	3 x 8	4	.45	1.53	4' 1"	8, 12, 16
3-4-50	3 x 8	4	.50	1.70	7' 4"	8, 12, 16
3-4-55	3 x 8	4	.55	1.87	6' 8"	8, 12, 16
3-4-60	3 x 8	4	.60	2.04	6' 1 $\frac{1}{2}$ "	8, 12, 16
2 $\frac{1}{4}$ -13-10	2 $\frac{1}{4}$ x 6	13	.10	.34	7' 0"	8, 10, 12
2 $\frac{1}{4}$ -13-15	2 $\frac{1}{4}$ x 6	13	.15	.51	4' 8"	8
Special Mesher for Open Partitions, Industrial Uses, etc.						
1 $\frac{1}{2}$ " No. 18	1 $\frac{1}{2}$ x 3	18	.06	.20	3' 3 $\frac{1}{4}$ "	8' 3"
1 $\frac{1}{2}$ " No. 16	1 $\frac{1}{2}$ x 3	16	.12	.40	4' 0"	8' 3"
1 $\frac{1}{2}$ " No. 13	1 $\frac{1}{2}$ x 3	13	.18	.60	4' 0"	8' 0"
1 $\frac{1}{2}$ " No. 10	1 $\frac{1}{2}$ x 3	10	.20	.68	4' 0" and 6' 0"	8' 0"
1 $\frac{1}{2}$ " No. 9	1 $\frac{1}{2}$ x 3	9	.24	.79	4' 0" and 6' 0"	8' 0"
1 $\frac{1}{2}$ " No. 8	1 $\frac{1}{2}$ x 3	8	.375	1.19	6' 0"	8' 0"
3 $\frac{1}{4}$ " No. 16	3 $\frac{1}{4}$ x 2 $\frac{1}{2}$	16	.15	.51	6' 6"	8' 0"
3 $\frac{1}{4}$ " No. 13	3 $\frac{1}{4}$ x 2 $\frac{1}{2}$	13	.24	.80	4' 0" and 6' 0"	8' 0"
3 $\frac{1}{4}$ " No. 10	3 $\frac{1}{4}$ x 2 $\frac{1}{2}$	10	.35	1.19	4' 0"	8' 0"
3 $\frac{1}{4}$ " No. 9	3 $\frac{1}{4}$ x 2 $\frac{1}{2}$	9	.53	1.80	4' 0"	8' 0"
3 $\frac{1}{4}$ " No. 18	3 $\frac{1}{4}$ x 1 $\frac{1}{2}$	18	.21	.72	4' 0" and 6' 0"	8' 0"
3 $\frac{1}{4}$ " No. 16	3 $\frac{1}{4}$ x 1 $\frac{1}{2}$	16	.29	.97	4' 0" and 6' 0"	8' 0"

CONCRETE REINFORCING USES



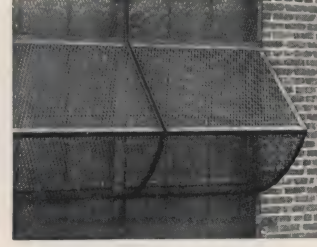
Roads and Sidewalks



Loading Platforms



Open Partitions



Window Guards

INDUSTRIAL USES

WICKWIRE SPENCER STEEL COMPANY

GENERAL OFFICES

41 East Forty-second Street, NEW YORK, N. Y.

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LOS ANGELES, CAL., 1070 No. Alameda Street
BUFFALO, N. Y., 1 River Road

SAN FRANCISCO, CAL., 101 Townsend Street
PORTLAND, ORE., 733 Northwest 16th Ave.

Product

CLINTON ELECTRICALLY WELDED WIRE FABRIC for Concrete Reinforcement.

For our pages on Chain Link and Iron Fences and Gates, Woven Wire Lath, and Metal Grilles, see File Index.

Clinton Electrically Welded Wire Fabric Scope of Use

Clinton Electrically Welded Wire Fabric is the ideal mesh reinforcement for concrete. It is extensively used in concrete floors, walls, roads, sidewalks, pipe, sewers, reservoirs, levees and all forms of concrete slab construction.

When used to reinforce floor slabs the larger longitudinal wires are located in line of greatest stress while the transverse members arranged at right angles to the longitudinal afford the most efficient means of distributing concentrated loads in a direction perpendicular to the main reinforcing members.

Because of its effective lateral as well as longitudinal strength, Clinton Welded

Fabric is particularly efficient in resisting stresses caused by temperature changes.

Material—It is a square or rectangular wire mesh with its points of intersection electrically welded and can be furnished in various gauges of wire and spacings. The wire used in manufacture is a special grade of high quality steel wire that has a minimum tensile strength of 70,000 lbs.

Finish—Clinton Electrically Welded Wire Fabric can be furnished with either plain steel or galvanized wire.

Economy and Accuracy of Installation

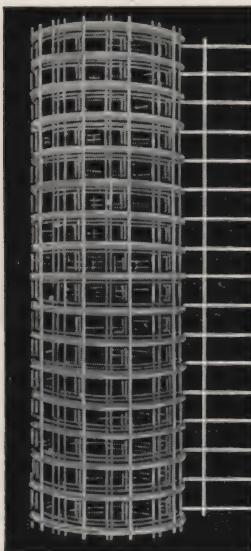
The fabric is delivered in rolls or sheets. Rolls any desired length not exceeding 150 ft. for heavy sizes and 400 ft. for light sizes. Great quantities can be placed quickly and accurately by unskilled labor, with

the assurance that every strand is in its proper position. This renders it a simple, safe and most economical reinforcing material for all forms of slab construction.

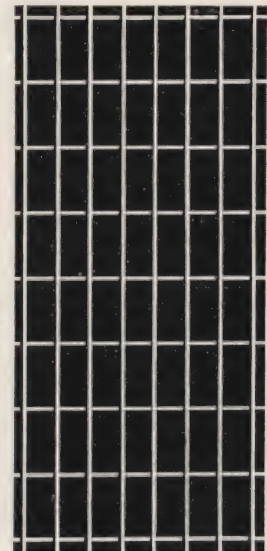
STANDARD SIZES—CLINTON WELDED FABRIC

Style No.	Spacing of wires		Size wires W&M gauge		Sec. area of steel per ft. width, sq. in.		Weight per 100 sq. ft., lbs.
	Longi-tudinal	Trans-verse	Longi-tudinal	Trans-verse	Longi-tudinal	Trans-verse	
2x16 2/8	2	16	2	8	.325	.015	119
2x16 3/8	2	16	3	8	.280	.015	104
2x16 4/9	2	16	4	9	.239	.013	89
2x16 5/10	2	16	5	10	.202	.011	75
2x16 6/10	2	16	6	10	.174	.011	65
3x16 2/8	3	16	2	8	.217	.015	83
3x16 3/8	3	16	3	8	.187	.015	72
3x16 4/9	3	16	4	9	.160	.013	61
3x16 5/10	3	16	5	10	.135	.011	52
3x16 6/10	3	16	6	10	.116	.011	45
4x16 3/8	4	16	3	8	.140	.015	56
4x16 4/9	4	16	4	9	.120	.013	48
4x16 5/10	4	16	5	10	.101	.011	40
4x16 6/10	4	16	6	10	.087	.011	35
4x16 7/11	4	16	7	11	.074	.009	30
4x12 8/12	4	12	8	12	.062	.009	26
4x12 9/12	4	12	9	12	.053	.009	22
4x12 10/12	4	12	10	12	.043	.009	19
4x12 12/12	4	12	12	12	.026	.009	13
5x9 12/12	5	9	12	12	.021	.012	12
6x12 0/6	6	12	0	6	.148	.029	65
6x12 3/3	6	12	3	3	.093	.047	51
6x12 4/4	6	12	4	4	.080	.040	44
6x12 5/5	6	12	5	5	.067	.034	37
6x12 6/6	6	12	6	6	.058	.029	32
2x2 12/12	2	2	12	12	.052	.052	37
2x2 14/14	2	2	14	14	.030	.030	21
3x3 10/10	3	3	10	10	.057	.057	41
3x3 12/12	3	3	12	12	.035	.035	25
3x3 14/14	3	3	14	14	.020	.020	14
4x4 6/6	4	4	6	6	.087	.087	62
4x4 8/8	4	4	8	8	.062	.062	44
4x4 10/10	4	4	10	10	.043	.043	31
4x4 12/12	4	4	12	12	.026	.026	19
4x4 13/13	4	4	13	13	.020	.020	14
4x4 14/14	4	4	14	14	.015	.015	11
6x6 2/2	6	6	2	2	.108	.108	78
6x6 3/3	6	6	3	3	.093	.093	68
6x6 4/4	6	6	4	4	.080	.080	58
6x6 5/5	6	6	5	5	.067	.067	49
6x6 6/6	6	6	6	6	.058	.058	42
6x6 8/8	6	6	8	8	.041	.041	30
6x6 10/10	6	6	10	10	.029	.029	21

Above sizes regularly used—other sizes can be furnished upon request.



Roll of Clinton Electrically Welded Wire Fabric, 48-in. Width
Shipped also in sheets if desired



Sheet of Clinton Welded Fabric
Also furnished in rolls when desired

THE BULL DOG FLOOR CLIP CO., INC.

Floor Clips, Buck Anchors, Veneer Anchors, Furring Anchors, Wall Plugs
108 North First Avenue, WINTERSET, IOWA

163 BRANCH REPRESENTATIVES AND 20 CONVENIENT DISTRIBUTING PLANTS

Bull Dog Floor Clips

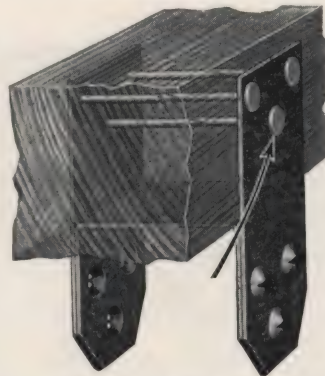
The use of Bull Dog Floor Clips to secure strips or sleepers for wood floor laid over concrete assures both structural efficiency and economy.

Rigid tests indicate that firm anchorage is assured when our instructions are followed. This means a firm level floor, no buckle, dome, or squeak. Friction tight nails for securing sleeper to clip are furnished gratis with all Bull Dog Floor Clips.

When Bull Dog Standard width (1 1/4 in.) (illustrated in cut below), or Bull Dog Super Junior width (1 3/8 in.) is used, no fill is necessary or required. Dead air space eliminates dry rot.

Economy

The use of Bull Dog Floor Clips saves 5¢ per sq. ft., because the cost of material and labor for a concrete fill is eliminated. Bull Dog Clips can be placed rapidly, and sleepers can be laid 50% faster than if anchored



Standard Bull Dog Floor Clip

by a fill material. Clips spaced 16 in. on centers require 576 anchors per 1000 sq. ft. of floor slab. This reduces dead load 18,000 lb. per 1000 sq. ft. of floor area, which means a proportionate reduction of reinforcing steel.

Quick delivery is assured at all times. We have 163 representatives throughout the United States with stocks maintained at 20 well-located shipping points.

Where Ordinances Require a Fill

With a fill, it is not necessary to use the Standard or Super Junior Bull Dog Clip. The Junior 5/8-in. wide (see table) is suitable for this type of construction and effects a still greater saving in anchoring floors to concrete. With sleepers spaced 16 in. on centers and clips spaced 30 in. on centers along each sleeper 300 clips are required for each 1000 sq. ft. of slab at a cost of \$6.00. This cost is more than offset in the time and expense of bracing the strips, beveling, etc. and a large saving in expense of fill, material and labor.

BULL DOG FLOOR CLIPS FOR WOOD FLOORS ON CONCRETE NOW MADE IN THREE WIDTHS

Types	Width of G. I. metal strips	Gauge metal used	Prices	Sizes
Standard..... used without fill	1 1/4 in.	20 ga.	2-in. \$35.00 M 3-in. 40.00 M 4-in. 45.00 M	Each type available in three sizes to fit 2, 3, or 4-inch dressed sleepers
Super Junior..... Used with or without fill	1 3/8 in.	18 ga.	All sizes \$25.00 M	
Junior..... Used with fill	5/8 in.	18 ga.	All sizes \$20.00 M	



Bull Dog Standard Without a Fill



Bull Dog Junior Where Fill Is Required



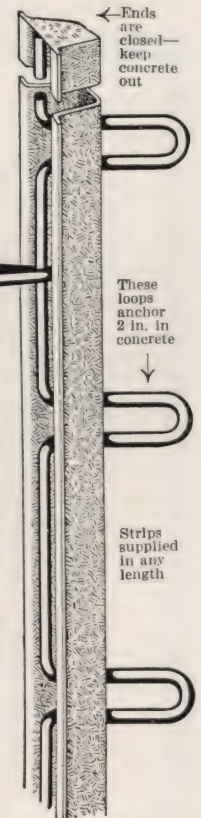
New Bull Dog Buck Anchor

This buck anchor, as used in tile or other types of masonry partitions, is a time saver. It is efficient, strong, and economical. Literature and details are available

Bull Dog Veneer Wall and Ceiling Anchor

This veneer anchor consists of an anchor strip which is tacked to the forms before the concrete is poured. Special anchors for brick, stone or terra cotta are fastened to the strip when masonry work is done.

Any concrete which enters the slot through improper installation can be easily removed by tapping with a trowel or hammer, due to the half-moon shape of the slot whereby



PATENTED JUNE 14, 1921 BY U.S. 1,381,740

BULL DOG FLOOR CLIP
AS SHIPPED AND AS PLACED IN SLAB WITH TABS FOLDED DOWN FLAT OVER THE TOP

"PUT THE BULL DOG ON YOUR PAYROLL"

SIX QUICK STEPS FOR LAYING WOOD FLOORS IN CONCRETE CONSTRUCTION.

THE PERFECT SYSTEM FOR ANCHORING A WOOD FLOOR TO A CONCRETE SLAB.

Put the Bull-Dog on your Payroll

STEP NO. 1.
PLACING CLIPS USING DOUBLE STRAIGHT EDGE AND GUIDES.

STEP NO. 2.
TOP TABS BENT UP WITH CHISEL WHEN READY TO INSTALL SLEEPERS.

STEP NO. 3.
SLEEPERS ARE PLACED BETWEEN RAISED TABS AND HELD SNUGLY.

STEP NO. 4.
STRIPS ARE LEVELED UP AND NAILED THROUGH HOLES PUNCHED IN TABS.

STEP NO. 5.
LOW PLACES ARE WEDGED AND THEN SLUSHED-IN WITH THIN CEMENT MORTAR.

STEP NO. 6.
FINISHED FLOOR. STRIPS ARE NAILED TO SLEEPERS IN USUAL MANNER.

ONE PER CLIP, NO. 20 GAUGE SHEET METAL, ASSURES STRENGTH AND RIGIDITY WHEN TABS ARE RAISED.

CLIP WITH TABS RAISED TO RECEIVE SLEEPERS.

NEW SHEET METAL GUARANTEED AFTER SLEEPERS ARE PLACED.

HOLES PUNCHED IN TABS PERMIT STRIPS TO BE NAILED TO SLEEPERS.

ALL CONCRETE IS LAID ON TOP OF SLAB, WHERE READY ACCESSIBLE.

CEMENT MORTAR PLUMBING.

WEDGES.

NO HIGH SPOTS TO BE CUT DOWN.

LEVEL SLAB SURFACE MINIMIZES WEDGING AND SLUSHING.

THREE HOLES IN TAB PERMIT EACH END OF STRIP TO BE NAILED. NO BENTLING NECESSARY.

EACH STRIP LIES FIRM AND FLAT ON CONCRETE SLAB.

NO FILL IS NECESSARY BUT WHERE PROVED BY BUILDING ORDINANCES OR DEV SAND FILL IS RECOMMENDED.

NO RELAY. WRITING FOR CONCRETE FILL TO DRY OUT.

WORKMEN CONSTRUCT GUIDE OF TWO PLANKS WITH STRAIGHT EDGES MARKED WITH SAYS TO SECURE CORRECT SPACING WITHOUT MEASURING.

WALKING ON PLANKS OF GUIDES ELIMINATES FOOT MARKS IN SOFT CONCRETE.

CLIPS FLUSH IN HARDENED CONCRETE GIVE UNCONSTRUCTED FLOOR FOR USE.

ANCHORAGE STRENGTHENED BY KEYING-LOGS ON CLIPS WHEN CLIPS ARE PLACED.

CONCRETE WORKERS ARE THROUGH WITH JOB WHEN CLIPS ARE PLACED.

PERFECT SPACING AND ALIGNMENT SECURED AUTOMATICALLY WITH THE GUIDE, ELIMINATING ALL MEASURING.

SCREENS PLACED EVERY 8 OR 10 FEET IN SLAB BEFORE CONCRETE IS POURED PERMITS LEVELING OF SURFACE WITH STRAIGHT EDGE.

Bull Dog Floor Clips—Installation Data

the opening is the largest part of the slot.

Advantages—

Anchors can be adjusted to exactly meet the course which assures that every course will be properly tied and eliminates the guesswork of placing ties when concrete is poured—which method is inefficient and uncertain.

Central U. S.

Price:

Anchor Slots,

\$30.00 M. ft.

Anchors,

\$13.50 M. pieces.

Anchor strip

THE V-W COMPANY

Tiger Floor Clips

TELEPHONE
ADams 3054

473 East Broad Street, COLUMBUS, OHIO

NEW YORK, 149 Church Street—BARclay 7-7728
CHICAGO, 820 North Michigan Avenue—SUPERior 3244

RICHMOND, 110 North Seventh Street—Dial 2-2949
PHILADELPHIA, 1316 North 18th Street—POPlar 2926

Tiger Floor Clip Features

Cannot Loosen or Pull Out—Tiger Clips are guaranteed not to loosen or pull out. Examination of their construction will prove that they are built so as to become firmly embedded in the concrete. They last as long as concrete.

Set Flush—"Tigers" set flush with the concrete slab surface without obstruction during other stages of construction.

Lowest Cost—Tiger Floor Clips are lower in price, netting a material saving on construction work.

Easily and Cheaply Placed—Tiger Clips are easily and speedily placed in fresh concrete. Just shove in place, that is all until time to place sleepers.

Air Circulation—Dry air space between sleepers eliminates moisture forming, prevents termites and dry rot.

Placing Tiger Floor Clips

A simple guide can be made by using two planks, spaced 12 in. apart from left edge to left edge, and held by strips that extend 12 in. past left edge of plank; 16-in. marks for placing are staggered on the two planks so that two rows can be laid simultaneously. For spacing sleepers 16 in. on centers, space boards 16 in. from left edge to left edge and extend strip 16 in. past left edge. For 24-in. placing, mark guide boards accordingly.

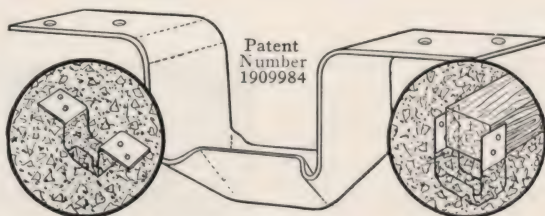


Notice in diagram below how small paddle pushes "Tigers" easily into concrete. Many contractors use pliers, holding clip with pliers at narrow cuplike section, as they push it into concrete.

As paddle or pliers are removed, concrete flows in, filling cup and securely holding clip in place. These methods are much speedier than by hand.

Suggested Specification

Immediately after pouring concrete upon which wood flooring is to be placed, insert TIGER FLOOR CLIPS, manufactured by THE V-W COMPANY, Columbus, Ohio, made of 1 1/4-in. No. 20 gauge steel, electro-plated with pure zinc. Each clip will have two vertical side arms joined at lower ends by a horizontal, cup-shaped continuation of side arms that permits clip to slide easily into concrete and keeps it from loosening after concrete has set. The upper end of each side arm extends outward horizontally, and can be easily bent to a ready to nail sleepers. Clips will be spaced .. inches on center along .. inch wide sleepers spaced .. inches on center.



Ears Down on Concrete

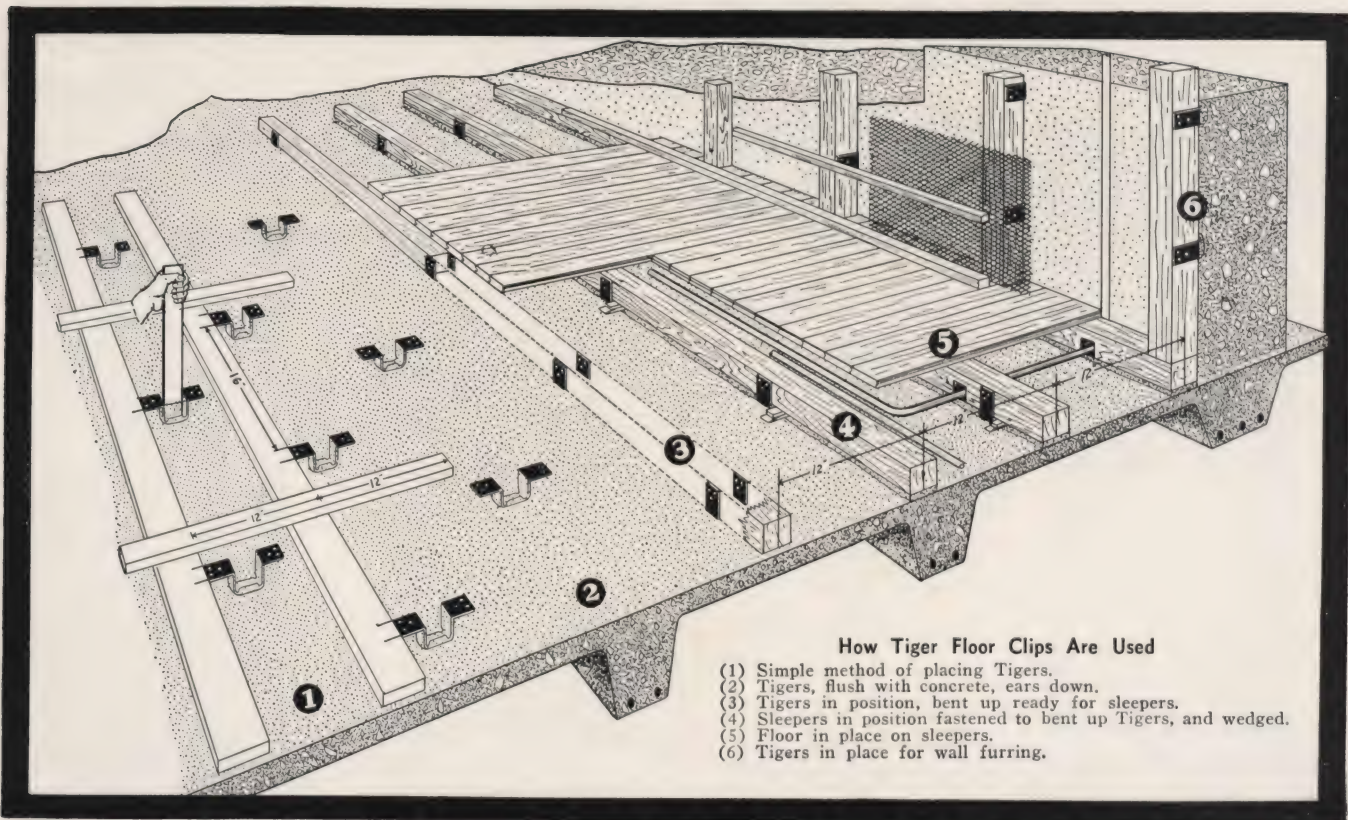
Ears Up for Nailing

HOW TO CALCULATE THE NUMBER OF CLIPS REQUIRED

Sleeper spacing, inches	Clip spacing, inches	Number of clips per 1000 sq. ft.
12	16	800
16	16	600
12	24	550
16	20	500
16	24	400

Standard sleeper widths: 1 1/2", 1 3/4", 2 1/2" and 3 1/2" in.

Price Delivered—\$25.00 per thousand "Tigers," including electro-zinc plated nails.



How Tiger Floor Clips Are Used

- (1) Simple method of placing Tigers.
- (2) Tigers, flush with concrete, ears down.
- (3) Tigers in position, bent up ready for sleepers.
- (4) Sleepers in position fastened to bent up Tigers, and wedged.
- (5) Floor in place on sleepers.
- (6) Tigers in place for wall furring.

A new V-W product—Tiger Wallboard Clips for attaching fiber board to walls and ceilings without exposed nailheads. Write for information

AMERICAN CONCRETE EXPANSION JOINT CO.

221 North La Salle Street
CHICAGO, ILL.

ACE EXPANSION AND CONTRACTION JOINTS

*Swimming Pools—Reservoirs—Canal Linings—Warehouse
Floors—Docks—Buildings—Industrial Plants—Sidewalks—
Driveways—Air Port Runways—Bridges—Railroad Viaducts*

A Mechanical Means of Joining Precast or Poured Concrete Slabs

ACE JOINTS provide a mechanical means of joining precast or poured concrete slabs for a wide variety of concrete construction in a manner which allows movement during expansion or contraction due to changes in temperature, moisture content, or mechanical forces. Use of ACE JOINTS in the construction of retaining walls or floors prevents transverse cracking, rupturing and disintegration due to longitudinal movement. They protect parapet walls against undue pressure from roof slabs under expansive forces. Absolute watertightness is assured, yet the unrestricted movement of the slab is maintained and transmission of loads across the joint is provided, insuring proper structural strength at all times.

New Possibilities in Design and Construction

New possibilities in design are opened by ACE JOINTS. When used in sidewalls and floors, former limitations in design and structure are removed. Also substantial saving in time and effort enables contractors to do better work and makes possible, real economies. ACE JOINTS form their own bulkhead and concreting may be carried on continuously, without pouring alternate slab sections. A few outstanding examples of the manner in which ACE JOINTS have made construction cheaper, stronger and more durable, are to be found in swimming pools and reservoirs.

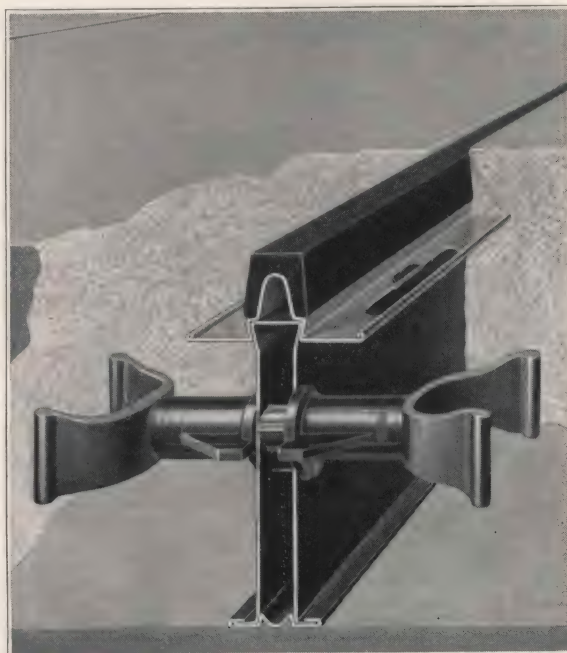
Permanent Provision for Free Expansion and Contraction

The AMERICAN CONCRETE EXPANSION JOINT CO. and its engineers have specialized in providing expansion joints to effectively join adjacent concrete slabs and at the same time allow for definite movement of the structure. The ACE JOINT is a perfected and patented device which gives life and vitality to rigid, inert concrete structures.

It provides a truly scientific division of slabs with permanent joints forming free air spaces. This permits natural expansion and contraction without injury to the structure. Such air spaces are kept continuously clear of foreign matter by sheet copper seals securely anchored to the slabs on either side of the joint. Premolded bituminous caps are cemented and wired securely to the tops of these copper seals. Thus, a permanent compressible seal is formed that will not extrude beyond the surface level of the slabs during their expansion and contraction movements.

ACE JOINTS are manufactured in a variety of types for wall, floor and roof construction. Detailed information and a highly informative booklet will be mailed on request.

Our Engineering Department will also be glad to consult with you, without obligation, as to the application of ACE JOINTS to a particular problem. We are also prepared to supply complete layouts of specific jobs.



Cross Sectional View, Cut Back, of Watertight Ace Joint
Installed between wall or floor slabs with new-type load transmission device in place of common dowel bar

MEMORANDA

**MASONRY
MATERIALS**
- SECTION -

3

CATALOGS 58 to 76

**STRUCTURAL
SYSTEMS**

AEROCRETE CORPORATION OF AMERICA

Aerated Concrete Products

R. C. A. Building, Rockefeller Center
49 West 49th Street
NEW YORK, N. Y.

LICENSED REPRESENTATIVES IN THE UNITED STATES

BALTIMORE, MD., W. P. Butler, 505 Hilton Avenue, Catonsville, Md.
BOSTON, MASS., E. Stanley Wires Co., Inc., 120 Boylston Street
BRUNSWICK, ME., Maine Concrete Company
CHICAGO, ILL., The Aerocrete Western Corporation, 612 No. Michigan Avenue
CLEVELAND, OHIO, Aerocrete Ohio Corporation, Citizens Building

CONNECTICUT, Brennan & Sloane, 274 Madison Avenue, New York, N. Y.
NEW ORLEANS, LA., Clifford F. Favrot Supply Co., P. O. Box 116, Station G
NEW YORK, N. Y. (Precast Products), H. W. Bell Co., 2582 Park Avenue
PHILADELPHIA, PA., Robert L. Martin, Architects Building
WASHINGTON, D. C., W. P. Butler, 505 Hilton Avenue, Catonsville, Md.

REPRESENTATIVES IN FOREIGN COUNTRIES

BERLIN, GERMANY, Torkret Gesellschaft, M. B. H.
LONDON, ENGLAND, Aerocrete (Britain), Ltd.
MONTREAL, QUEBEC, The Aerocrete Corporation of Canada, Ltd.

HONGKONG, CHINA, Aerocrete (Hongkong), Ltd.
SHANGHAI, CHINA, The China Aerocrete Co. Ltd., Wayfoonc House, 56 Szechuen Road
PARIS, FRANCE, Aerocrete (S. A. France), 3 Square de l'Opera

AEROCRETE LIGHTWEIGHT CONCRETE

General Properties of Aerocrete

Aerocrete is a light weight concrete in which voids, or air cells, take the place of the crushed stone or gravel in ordinary concrete. It is a mixture of cement, sand or hard coal cinders, and water, to which is added a specially prepared compound supplied by the AEROCRETE CORPORATION OF AMERICA and its licensed representatives.

The Aerocrete compound decomposes a small part of the water in the wet mix into its component parts and the free gas produced causes the concrete slurry to expand after placing. The generation of the gas produces a concrete of cellular structure in which the voids are evenly distributed and of a uniform size.

Being a concrete product, Aerocrete has the permanence of ordinary concrete, but the introduction of pores in the material makes it light, highly soundproof, heat insulating, and fireproof.

The technique of mixing and placing Aerocrete is practically identical to that of ordinary concrete, but the plasticity of the Aerocrete slurry and the fact that much less material is handled *enable the contractor to place Aerocrete at a labor cost much less than the cost of placing ordinary concrete.*

Weight

Aerocrete can be produced, by varying the proportions of the ingredients, to weigh from 40 to 80 lbs. per cu. ft., as compared to stone concrete weighing approximately 144 lbs. and cinder concrete about 108 lbs. per cu. ft.

In specifying Aerocrete, the designing architect or engineer can select the proper grade suitable for his purpose and thus obtain a maximum saving in his structure.



Purposes for Which Aerocrete is Suitable

The various grades of Aerocrete are suitable for different purposes.

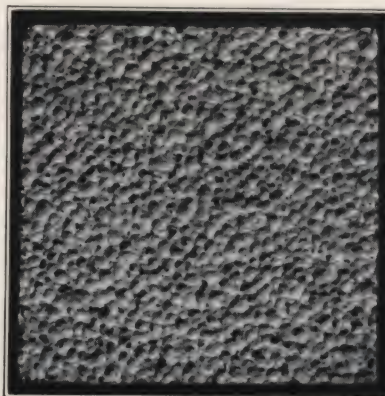
The following tabulation will be of aid in selecting the correct or suitable weight for the purpose intended.

Purpose	Aerocrete per Cu. Ft.
Roof fill for thermal insulation.....	40 to 60 lbs.
Sleeper fill below wood flooring for soundproofing.....	50 to 60 lbs.
Fill below cement finish, tile, terrazzo, etc.....	50 to 80 lbs.
Fill incasing steel beams in Aerocrete flat slab floors.....	50 to 60 lbs.
Structural Aerocrete for short-span arch construction.....	60 to 80 lbs.

Note: In general, the heavier weights are somewhat lower in cost than the lighter weights.

Heat Insulation

The cellular structure of Aerocrete is composed of evenly distributed, *closed* voids. The high thermal insulation of Aerocrete is therefore easily understood. In a fire test for the Building Department of New York, conducted by the Columbia University, the lower flanges of steel beams, protected by 2 in. of 60-lb. Aerocrete, were exposed on three sides to the fire. During 4 hours



Aerocrete Block Showing Actual Size Air Cells

COEFFICIENTS OF HEAT TRANSMISSION

Material	Wgt. per cu. ft., lbs.	C*	Equivalent thickness, in.
Corkboard	10	0.30	1.00**
Aerocrete	40	1.06	3.54
Aerocrete	50	1.44	4.80
Aerocrete	60	1.80	6.00†
Aerocrete	70	2.18	7.27
Aerocrete	80	2.56	8.53
Brickwork (dry)	132	4.00	13.33†
Concrete	140	8.30	27.70††
Cinder concrete	110	5.20	17.35†
Gypsum	...	2.98	9.93‡

*C—Coefficient of heat transmission in B.t.u. per hour, per square foot, per inch thickness, per degree difference Fahrenheit.

Authorities

**Bureau of Standards.
†Pebbles, Armour Institute.
††Willard, Lighty & Harding.
‡A. S. R. E., Committee Report.

the temperature after the first half hour was never below 1700° F. and averaged 1775° F. The temperature of the steel 2 in. from the exposed surface had risen only from 47° F. to 221° F. at the end of the test.

Aerocrete withstands the effect of a blazing fire for hours without peeling, cracking or crumbling.

Soundproofness

Due to the cellular structure of Aerocrete, sound waves passing through the material strike cell wall after cell wall and are subjected to absorption in the surface of the cells. For this reason, soundproofness is one of the outstanding qualities of Aerocrete. Numerous comparative tests, per-

formed by experts on sound insulation, have established the superior qualities of Aerocrete as a deadener of sound. *A slab of Aerocrete transmits only from one-half to one-third of the sound transmitted by many other materials recognized as having sound-retardant properties.*

Compressive Strengths

40-lb. Aerocrete has a compressive strength of about 250 lbs. per sq. in. The strength increases with the weight. 80-lb. structural Aerocrete has a compressive strength of 750 to 1200 lbs. per sq. in.

In the heavier grades, from 60 to 80 lbs., the compressive strength can be controlled by varying the ratio of the cement in the mix. Therefore, an Aerocrete of proper weight and strength can be specified within wide practical limits.

APPLICATION OF AEROCRETE

1. AEROCRETE LONG SPAN "L. S. S." FLOOR SYSTEM

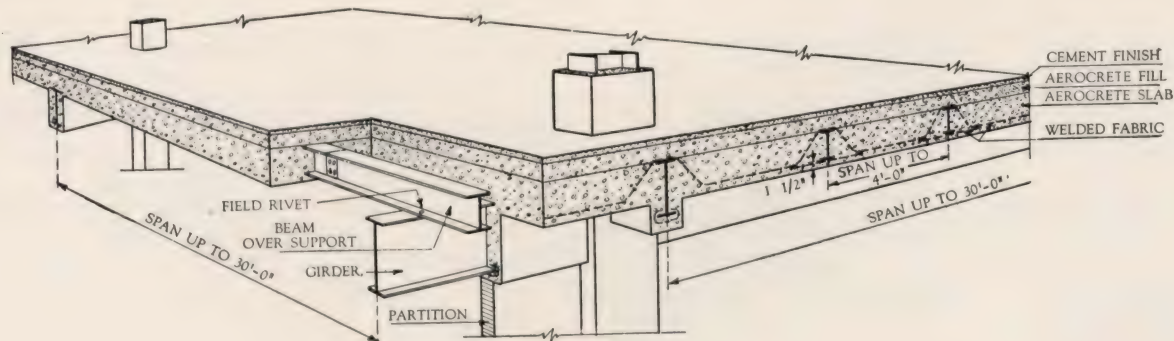
The design of the Aerocrete "L. S. S." Floor utilizes the outstanding properties of Aerocrete to excellent advantage to give a floor of exceptional rigidity and shallow depth, combined with safety, speed and economy of erection. The system, protected by U. S. Patents, offers technical and economical advantages in most classes of fireproof buildings, particularly notable in apartment houses, schools, hospitals, and office buildings.

Construction Characteristics

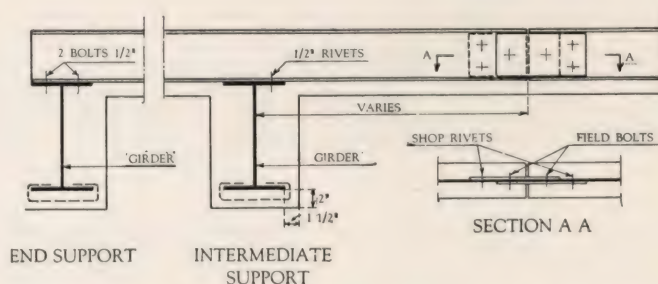
The construction consists of standard structural I-beams spaced 3 to 5 ft. apart which are erected as part of the structural steel work. The depth of these beams will vary from 4 to 8 in., depending upon the span and load. Flat formwork

is hung directly from the I-beams and on these forms the Aerocrete is poured so as to fireproof the underside of the beams and so as to encase them thoroughly in a light, fireproof, soundproof slab of Aerocrete.

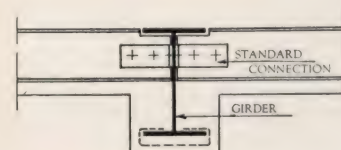
Its advantages in the finished construction are due to the nature of the material. Owing to the lightness of Aerocrete, it is possible to install a slab of sufficient thickness to encase the beams without increasing the dead load as compared to competing types of construction. In fact, a considerable saving in weight can usually be effected. Owing to the plastic consistency of Aerocrete, the material flows entirely around the haunches and web of each beam so as to greatly stiffen these members. As measured by the permissible minimum deflection of $\frac{1}{860}$ of the span, the beams encased in Aerocrete show an additional stiffness of better than 100%. Due to the cellular



TYPICAL FLOOR SECTION



DETAIL OF STEEL BEAM RUNNING OVER SUPPORTS



DETAIL OF STEEL BEAM FRAMED INTO GIRDER

LONG SPAN STEEL-AEROCRETE FLOOR CONSTRUCTION

nature of the material, the floor system is highly insulating to sound and to heat and cold.

One of the main advantages of the system is its simplicity. Owing to the fact that the stresses are taken in the steel, the Aerocrete only carries over the short spans between the beams. This results in its being possible to strip the forms safely in from two to three days in normal curing weather. Posting and shoring is of course not needed as the forms are hung from the steel. In the erection of multi-storied buildings it should be noted that the beams for the floor give a working deck for the erection of the steel skeleton, usually resulting in a lowered unit price on the cost of steel erection. As compared to competing types of construction where concrete ribs span from girder to girder, the additional structural steel required results in a better ratio of steel to be erected to concrete work to be installed, and since the forms are hung from the steel and can be stripped in 48 to 72 hours, it is a much simpler matter for the two trades to progress at a uniform rate.

In spite of the superior features of the floor, its cost is considerably below that of other systems giving a shallow depth floor with flat ceiling. The cost of the forms is considerably reduced, and they can usually be installed for from 6¢ to 7¢ per sq. ft. The reinforcing will cost from 2½¢ to 3¢ per sq. ft. and the cost of the Aerocrete will be in the neighborhood of 2½¢ per sq. ft. per inch thickness. The steel required will vary with the load and the span.

In most localities, the weight of the Aerocrete, using sand

as an aggregate, will be 60 lbs. per cu. ft., but where good steam hard coal cinders are available, an Aerocrete weighing 50 lbs. per cu. ft. may be specified. Thus where the spans and load permit the use of a 6-in. I-beam, the dead load of the floor will be about 40 lbs. per sq. ft. with sand Aerocrete, and somewhat less with cinders. The weight of the floor, therefore, compares favorably with other comparable types of long span smooth ceiling floor systems, allowing an appreciable reduction to be made in the size of girders, columns and footings.

Simplicity and flexibility of design are properties of the system. A floor can be designed within the widest practical limits for any load or span that will occur in buildings designed for human occupancy. In addition, the designing engineer can take care of variations of span or load or of concentrated loading with ease and flexibility and without unnecessary study or costly detailing. Openings of one sort or another are easily provided for, and job or tenant changes can be effected with little trouble, as the Aerocrete slab can be cut into almost at will without disturbing the structural strength of the floor.

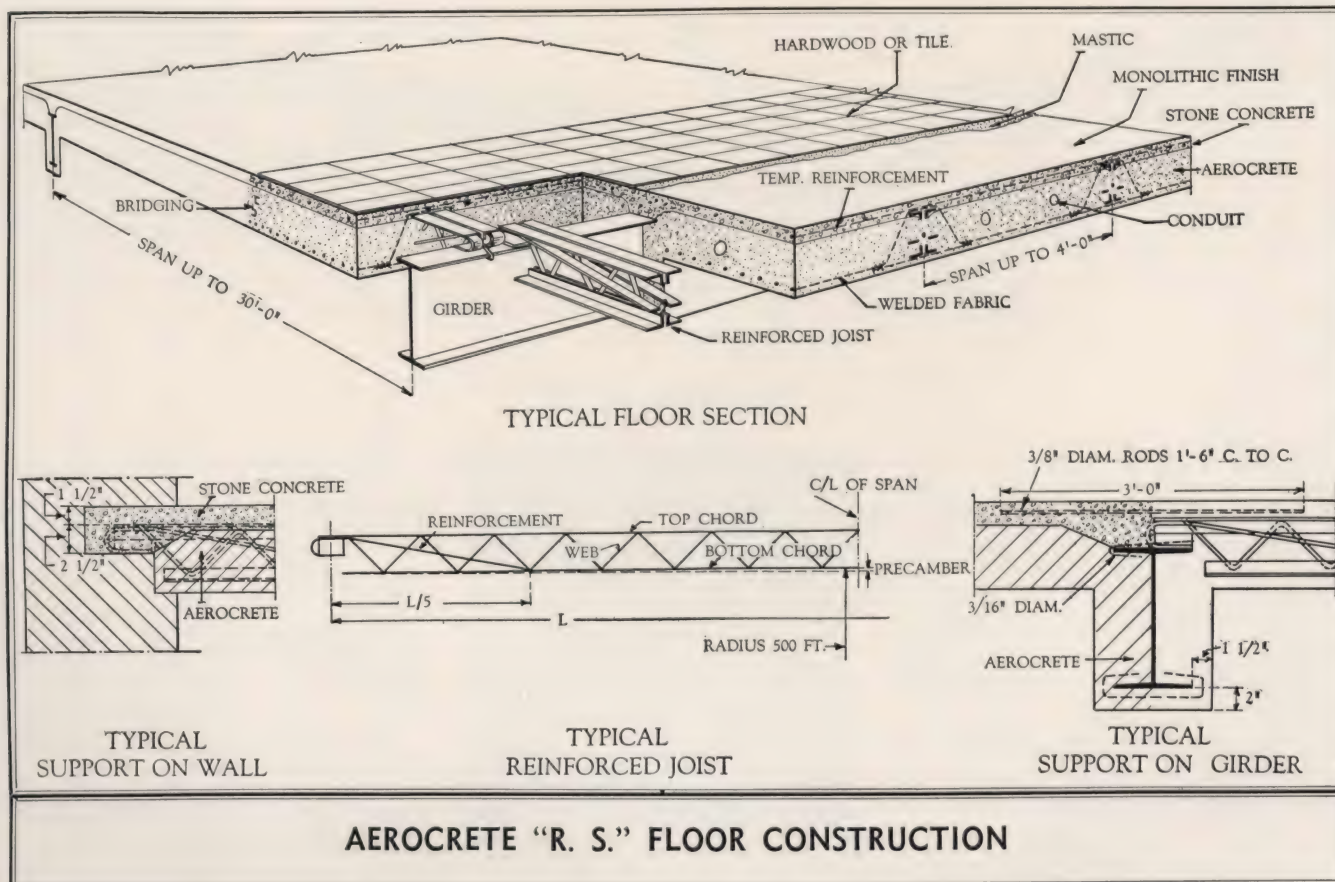
Installations

The "L. S. S." Floor system has now been used in a number of important buildings, such as the recently completed group for the Harlem Hospital, New York, N. Y., and the new Timothy Dwight Group of Dormitories at Yale University, New Haven, Conn. We will be glad to furnish a complete list of the buildings in which the system has been installed.

2. AEROCRETE "R. S." FLOOR CONSTRUCTION

The Aerocrete "R. S." Floor Construction consists of a combination of Aerocrete with stone concrete and steel, to form a composite reinforced concrete floor with properties of great stiffness and rigidity, minimum thickness, absolute fireproofness, and high sound insulation. The underside of the slab is flat, ready to receive the plaster direct. In roof construction, the thermal conductivity of the Aerocrete is sufficiently low so that no cork, fibreboard, or other type of insulation is required.

For simplicity, the construction may be considered to consist of three parts. First, there is a flat slab of Aerocrete of a density of 60 lbs. per cu. ft. Secondly, there is embedded in the Aerocrete a steel member, the bottom flange of which is 1 in. up in the Aerocrete. This steel member consists of a heavy tension member connected by an open web system to a lighter top member, this last extending up above the Aerocrete. Thirdly, this top member is encased in a slab of stone concrete 2 to 2½ in. thick, the steel and the concrete together



taking the compressive stresses, as will be described in what follows. A glance at the attached sketch of a typical cross section will clarify the relationship of the various parts of the system.

As a practical construction expedient, the steel reinforcement is prefabricated in the form of light reinforced trusses, ranging in weight from $7\frac{1}{2}$ to 28 lbs. per lin. ft., depending upon span and load. From these trusses are hung the forms for receiving the Aerocrete. As a result, these forms are of the most economical type, consisting of flat sheathing lumber laid on stringers, and the need for posting, shoring or centering is eliminated. The top member of the truss is designed to take the stresses resulting from the weight of the Aerocrete and the stone concrete. Therefore, the forms can be stripped in from three to five days, or as soon as the Aerocrete and concrete have set sufficiently to safely support their own weight over the span between the trusses.

The trusses are spaced from 3 to 4 ft. apart, the wider spacing being somewhat more economical where conditions permit. As part of their erection, the trusses are stayed by means of rigid channel bridging, in accordance with the best construction practice for this type of member. After the forms have been placed and the Aerocrete is poured, the stone concrete is placed within 24 to 72 hours. The concrete may be finished monolithically to receive, or to act as, the finished flooring. As part of the construction, light reinforcement, consisting of light welded wire mesh, is placed in the bottom of the slab. One-quarter inch pencil rods 18 in. on centers are placed in the stone concrete as temperature reinforcement.

The finished construction gives a smooth underside, ready for plastering. This underside consists of a continuous flat surface of Aerocrete to which a good bond with plaster is easily obtained.

Using a light reinforced truss in the construction enables conduits, and in the larger sizes, pipes as well, to be run in any

direction through the open webs. In this way the necessity for a floor fill is obviated, with a consequent saving in cost, in dead load, and in floor thickness.

The design of the trusses themselves is of considerable engineering interest. The top member may consist of two angles, a tee or other shape of sufficient lateral stiffness and with a margin to allow for the additional stresses that occur from the addition of the designed applied load. The bottom member consists of two parts—first, a portion similar to the top member which, secondly, is assisted by two flat reinforcing bars. These run along in the bottom steel in the center of the span, and, at a distance of $L/5$ from the end, they are bent upward to join the top chord at the end of the member. They end in substantial hooks, which are embedded in stone concrete. It may be stated, therefore, that this reinforcement assists in giving intermediate support to the beam and thus to the floor construction, adding greatly to its stiffness and rigidity. As a result, the floor can be considerably overloaded without approaching the allowable deflection of $1/360$ th of the span, and a heavy concentrated load is distributed over two or more joists, due to the effective distribution of load by the thick slab, without causing distress to the floor construction.

To sum up, this floor system consists of a stone concrete slab reinforced by a steel member, prefabricated to carry the forms and the dead load and an Aerocrete filler. Compressive and tensile stresses are taken in the concrete and steel. Shear stresses are taken by the steel and the Aerocrete. Flat forms are hung from the steel so that the erection is speedy, easy and economical. Conduits can be run through the trusses in any direction. A permanent economical plaster finish is insured, due to the flat continuous underside of Aerocrete. The stone concrete may be finished monolithically. The resulting floor is absolutely fireproof and highly soundproof. The nature of the design permits of extreme flexibility in laying out the system in practice. Owing to the special reinforcing of the trusses, an exceptionally stiff and rigid floor results.

3. STRUCTURAL AEROCRETE IN SHORT SPAN CONSTRUCTION

Aerocrete can be produced in Structural Grade to weigh from 60 to 80 lbs. per cu. ft. as desired. This material is offered as highly suitable for use in so-called "Short Span Construction." That is to say, for spans up to 8 ft. between structural steel framing, slabs from $3\frac{1}{2}$ to 5 in. thick, but generally 4 in., reinforced with welded wire mesh or with reinforcing bars. Where bars are used, transverse temperature reinforcing of pencil rods is required 18 in. on centers.

Construction of this type is highly flexible as regards design as well as low in cost to install. It is speedy to erect and adapt-

able to irregular conditions of framing. Since the forms are hung from the steel, the work goes forward rapidly without interfering with the progress of the other trades.

Structural Aerocrete is a highly satisfactory material for use in the structural slab and for fireproofing the structural steel in Short Span Construction. Its low weight as compared to stone and cinder concrete results in substantial savings in framing and in foundation costs. Its thermal insulation makes it preferred as a fire resistant material. Its property of resisting the

REINFORCEMENT IN SQ. INS. PER FT. WIDTH FOR DIFFERENT LOADS AND SPANS

Aerocrete—80 lbs. per cu. ft. Ultimate Crushing Strength = 800 lbs. per sq. in. $M = wL^2/12$; $f_s = 18,000$; $f_c = 325$ (max.); $n = 60$.

Total load lbs./sq. ft.		Span in feet							
		5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	
80	As	0.062	0.062	0.062	0.065	0.076	0.089	0.103	4" slab
	fc	117	134	151	168	185	202	220	
100	As	0.062	0.062	0.069	0.083	0.098	0.113	0.131	4" slab
	fc	135	156	175	195	216	235	256	
120	As	0.062	0.07	0.085	0.102	0.119	0.138	0.159	4" slab
	fc	155	175	196	219	243	266	292	
140	As	0.067	0.083	0.101	0.12	0.14	0.163	0.187	4" slab
	fc	172	196	217	243	267	297	328	
160	As	0.078	0.097	0.118	0.138	0.162	0.188	0.212	4" slab
	fc	188	214	237	267	295	329	365	
180	As	0.089	0.11	0.132	0.157	0.183	0.21	0.233	4" slab
	fc	202	229	259	289	324	363	403	

Aerocrete—60 lbs. per cu. ft. Ultimate Crushing Strength = 650 lbs. per sq. in. $M = wL^2/12$; $f_s = 18,000$; $f_c = 250$ (max.); $n = 75$.

Total load lbs./sq. ft.		Span in feet							
		5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	
80	As	0.074	0.074	0.074	0.074	0.078	0.09	0.104	4" slab
	fc	89	107	128	151	173	189	205	
100	As	0.074	0.074	0.074	0.084	0.098	0.114	0.131	4" slab
	fc	111	135	163	181	200	220	240	
120	As	0.074	0.074	0.086	0.103	0.12	0.139	0.155	4" slab
	fc	134	161	184	204	222	250	271	
140	As	0.074	0.084	0.102	0.121	0.141	0.159	0.179	4" slab
	fc	167	182	203	227	253	277	299	
160	As	0.08	0.097	0.117	0.139	0.158	0.176	0.196	4" slab
	fc	174	198	223	250	276	302	327	
180	As	0.09	0.11	0.133	0.154	0.176	0.198	0.221	5" slab
	fc	189	216	243	271	296	325	353	



CONSTRUCTION DETAILS

AEROCRETE ARCH CONSTRUCTION

passage of sound is excellent and is described elsewhere herein. Combined with the above, its ease and economy of placing make it a preferred material for work of this nature.

Although Structural Aerocrete can be produced in a range of weights from 60 to 80 lbs. per cu. ft., for the sake of simplicity we have selected two of the most generally used grades for analysis.

The first is one weighing 60 lbs. per cu. ft. using a mixture of sand and clean hard coal cinders as aggregate. Where available slag or other light aggregate of suitable consistency can be used in place of cinders. The second grade is one weighing 80 lbs. per cu. ft., using coarse sand graded up to $\frac{1}{4}$ " to $\frac{1}{2}$ " as the aggregate.

4. ROOF CONSTRUCTION

Aerocrete is an ideal material for structural roof or roof fill. Its low weight results in a saving of structural steel while its excellent heat insulating qualities obviate the need for including expensive and often unsatisfactory insulation materials. Aerocrete is permanent as well as moisture and vermin proof. It gives an excellent base for built-up roofing.

For a flat roof, Aerocrete poured-in-place on forms is generally to be recommended in accordance with one of the three designs outlined above. For a sloping roof, precast Aerocrete

Full engineering data, for the use of the designer, is given in the attached tables. The regular "straight line" formulas have been used in the computations. Numerous tests, however, have demonstrated that the arch effect in this type of construction makes these formulas highly conservative. For those who are familiar with these results, we have carried the tables up to a value for working stress in the concrete of 40% of the ultimate. For designers wishing to use a lower value full design data is given so that the proper reinforcement and depth of slab can be arrived at readily.

A large number of representative jobs running back over seven years can be given to any interested architect or engineer. Several are illustrated on the last page of this catalogue.

planks should be specified. They give a smooth under-surface for plastering.

Aerocrete is one of the cheapest kinds of permanent roof for heated buildings. In specifying Aerocrete, the Architect is specifying structural roof and insulation at the same time.

For example, 4 in. of 50-lb. Aerocrete transmits only 0.38 B.t.u.'s per hour per square foot per degree difference Fahrenheit, or the equivalent of an inch of insulating board.

5. SOUNDPROOF PARTITION SLABS

We manufacture Aerocrete partition blocks for use in apartment houses, hotels, hospitals, and other buildings in which good sound insulation is a factor of primary importance. Architects, owners, and loaning institutions are all paying increasing attention to this important factor in building construction.

Aerocrete is highly resistant to sound. At 1000 sound cycles per second, a 4-in. Aerocrete partition block showed a sound attenuation of 42 decibels. This resistance factor is equal to that of a double wall of 7-in. thickness consisting of materials principally used in the past.

Therefore a sound insulating partition of Aerocrete is more economical to erect. The architect or builder is also able to maintain standard thickness of partition walls, thereby saving valuable rental space.

Aerocrete partition blocks are made in 3, 4, and 6-in. thicknesses. We will gladly submit a list of the large number of important buildings in which Aerocrete partition blocks have been used with the most satisfactory results.

As back-up blocks behind spandrels, Aerocrete partition blocks will reduce wall thickness for recessing radiators and give better heat insulation.

6. AEROCRETE FLOOR AND ROOF FILL

Dependent on the purpose for which it is used, Aerocrete fill is made in weights from 40 to 80 lbs. Like all Aerocrete, the fill is chemically pure, therefore no danger of corrosion is present when piping and conduits are embedded in the fill.

Compared to other kinds of fill, Aerocrete is considerably lighter. This saving in dead weight means saving in structural steel and in foundations.

Aerocrete fill gives a more soundproof floor. When poured, the Aerocrete mass is quite fluid and fills easily every crevice in the floor around pipes, ducts, etc. This property makes

Aerocrete a superior material for sleeper fill and also acts to largely restrain the telephoning of sounds along plumbing and heating pipes and structural members. Furthermore, it is inexpensive because it is easy to place and the quantity of material to be handled is smaller.

For roof fill, Aerocrete of required density and thickness gives sufficient thermal insulation without additional permanent insulating boards.

Aerocrete gives a monolithic job, highly soundproof and heat insulating, verminproof and permanent.

AEROCRETE SPECIFICATIONS

I. "L. S. S." Aerocrete Floor Construction

(1) Structural floors shall consist of standard rolled sections wholly encased in aerated concrete from 1 in. ($1\frac{1}{2}$ in.) below the lower flanges of the beams.

(2) All stresses will be figured to be taken in the steel.

(3) Aerated concrete is to be composed of a mixture of portland cement and clean sand plus a gas forming compound, harmless to the concrete, such as manufactured by the AEROCRETE CORPORATION OF AMERICA.

II. Aerocrete "R. S." Floor Construction

(1) Structural floors shall consist of reinforced bar joists, encased in aerated concrete and a top slab of dense concrete 2 in. ($2\frac{1}{2}$ in.) thick.

(2) Tensile stresses will be figured to be taken in the reinforcement and bottom chord of the bar joists. Compressive stresses to be taken in the top chord and the concrete top slab.

(3) Aerated concrete is to be composed of a mixture of portland cement and clean sand plus a gas forming compound, harmless to the concrete, such as manufactured by the AEROCRETE CORPORATION OF AMERICA.

III. Short Span Arch System

(1) Structural arches 4 in. thick for spans up to 8 ft. and fireproofing of beams shall be composed of structural Aerocrete weighing not less than 60 lbs. per cu. ft. (80 lbs. per cu. ft.).

(2) Structural slab shall be reinforced by welded wire mesh of type and cross section as shown on the plans.

IV. Floor and Roof Fill

Fill shall consist of aerated concrete weighing approximately .. lbs. per cu. ft., consisting of portland cement and sand, expanded by the action of a gas-forming compound, harmless to the concrete, such as manufactured by the AEROCRETE CORPORATION OF AMERICA.

V. Precast Roof

Roof shall be erected of precast planks of reinforced Aerocrete. Arrangement, position and thickness of slabs as shown on the plans.

The manufacturing process, designs and applications of Aerocrete are protected by a number of United States and foreign patents.



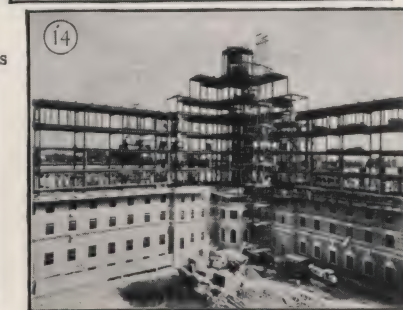
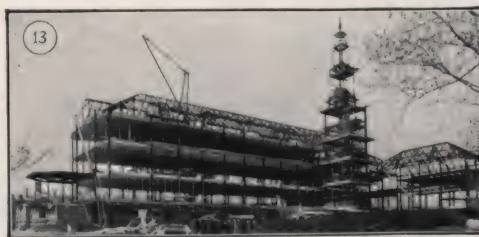
Some Buildings
in which



Has Been
Used

Dynamometer Building, Bureau of Standards,
Washington, D. C.

Reinforced Aerocrete structural roof and partition slabs



No. BUILDING
1. Rockefeller Center

LOCATION
New York, N. Y.

ARCHITECT
Reinhart, Corbett
Harrison, Mc-
Murray, Hood,
Foulhoux

PART USED FOR
N. B. C. Studios: Soundproof
partitions
Sunken Plaza: structural
floors and fill

2. I. C. C. Labor Dept. Bldg.
3. Essex House
4. Armory Bldg.
5. No. 1 Beekman Place
6. Board of Trade Bldg.
7. Bethlehem Steel Bldg.

Washington, D. C.
New York, N. Y.
Lynchburg, Va.
New York, N. Y.
Chicago, Ill.
Bethlehem, Pa.

Arthur Brown, Jr.
A. E. Lefcourt
Johnson & Brannon
Sloan & Robertson
Holabird & Root
Graham, Anderson,
Probst & White

Floor fill
Partition slabs
Arch construction
Floor fill
Floor fill
Arches, fireproofing, pre-
cast ceiling slabs in six
added upper stories
Partition slabs
Arch construction
Long span floors
Long span floors and fill
Structural roof arches

8. Majestic Apartments
9. Globe Insurance Bldg.
10. Y. M. C. A. Bldg.
11. Berkeley Dormitories
12. 32nd St. P. O. Addition

New York, N. Y.
New York, N. Y.
New Haven, Conn.
New Haven, Conn.
New York, N. Y.

Irwin S. Chanin
A. D. Shephard
Douglas Orr
James Gamble Rogers
McKim, Mead &
White
James Gamble Rogers
Sloan & Robertson
Graham, Anderson,
Probst & White
Frederic R. King

Long span floor and fill
Long span floors
Floor fill
Arches, sleeper fill and
soundproof partitions

13. Miriam Osborne Home
14. Harlem Hospital
15. Marshall Field Bldg.
16. Women's Republican Club

Rye, N. Y.
New York, N. Y.
Chicago, Ill.

New York, N. Y.



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Precast Reinforced Concrete Roof Slabs

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PITTSBURGH, PA.
ST. LOUIS, MO.
WASHINGTON, D. C.

PLANTS NEAR: CHICAGO, NEW YORK, PITTSBURGH and BIRMINGHAM

Featherweight Concrete Insulating Roof Slabs

These slabs represent the latest development in permanent, fireproof, no-maintenance roof construction. They are precast of Haydite aggregate (trapped air cells) instead of sand, *weigh as low as 10 lb. per sq. ft.*, are strong, and possess new insulating value. Featherweight Slabs go on the same light steel frame that carries other roofs. Used for flat or sloping roofs. Composition covering is required.

Featherweight Nailing Concrete Slabs

Form a fireproof concrete deck to which slate, ornamental tile, copper or other roofing can be directly nailed.

Featherweight Interlocking Slabs for Pitched Roofs

Form a complete waterproof roof, entirely eliminating all composition covering. Their attractive red color enhances the appearance of the building.

Featherweight Glass Insert Slabs

When used in combination with Featherweight Interlocking Slabs for top lighting, these slabs form an ideal "daylight roof." Can be distributed to admit light over entire floor space, or concentrated over any operation. Glass is embedded in the concrete during manufacture.

Federal Cork Insulated Slabs

Afford a splendid superinsulation for use in extreme conditions, as for instance on certain types of paper mill buildings.

The Roof for Permanence

Featherweight Slabs are made of the most indestructible of all commonly used materials—reinforced concrete. They are not affected by heat, cold, ice, snow, fire, water, acid fumes, gases, or any other destructive forces. They actually grow stronger with age.

Laid directly on structural steel, they make a light weight, fireproof construction requiring no painting, repairing or replacement.

The slabs carry a load well above all building code requirements.

Federal is the lowest cost permanent roof obtainable today. Over two hundred million square feet are in use.

Service and Structural Details

All Federal roofs are installed and fully guaranteed by us. Our engineers will gladly suggest the most economical layout of both steel and slabs, without charge or obligation. "Catalog and Roof Standards" on request.

Standard Specifications

Featherweight Concrete Insulating Roof Slabs

The roof decks are to be Precast Featherweight Concrete Insulating Channel Slabs $2\frac{3}{4}$ in. deep for spans up to 6 ft. 4 in. and $3\frac{1}{2}$ in. deep or more for longer spans. The web thickness is to be a full one inch, composed of an approved brand of portland cement and the highest grade Haydite aggregate in a mixture of one part of cement to four parts of aggregate accurately graded and thoroughly mixed and vibrated so as to obtain the greatest possible density. Each leg is to be reinforced with one deformed bar accurately centered so as to have at least one-half inch of dense, impervious concrete on all sides. The web of the slab is to be reinforced with a sheet of *galvanized welded wire mesh* accurately centered.

All joints of the channel slabs are to be cemented on the upper side with an approved brand of asphaltic cement and the finished deck to present a smooth surface ready for the application of the composition covering.

Standard slabs to carry 250 lb. per sq. ft., ultimate load uniformly distributed when resting on supports spaced the same as the purlins. No warped, cracked or broken slabs are to be placed in the roof. All slabs to be as nearly perfect as good workmanship will permit.

All slabs to be natural water and air cured under cover where a constant temperature is maintained of not less than 65° F.

The contractor shall submit details of precast slabs for approval before proceeding with manufacture.

All slabs are to be erected by or under the supervision of the manufacturer in a thorough, workmanlike manner.

Featherweight Nailing Concrete Roof Slabs

Standard Slabs to carry 250 lb. per sq. ft. ultimate load uniformly distributed when resting on supports spaced the same as the purlins. All slabs to be as nearly perfect as good workmanship will permit and no cracked, broken or warped slabs are to be placed in the roof. This contractor shall submit details of precast slabs for approval before proceeding with

manufacture. All slabs are to be erected by or under the supervision of the manufacturer, in a thorough, workmanlike manner.

Where specified, the roof-decks are to be precast Featherweight Nailing Concrete flat slabs of Haydite aggregate designed for the spans shown, with a top section of $1\frac{1}{4}$ in. of Nailing Concrete cast integral with the Featherweight Concrete bottom section.

Featherweight Interlocking and Glass Insert Slabs

All slabs to carry 250 lb. per sq. ft. ultimate load uniformly distributed when resting on supports spaced the same as the purlins. All slabs to be as nearly perfect as good workmanship will permit and no cracked, broken or warped slabs to be placed in the roof. This contractor shall submit details of precast slabs for approval before proceeding with manufacture. All slabs are to be erected by or under the supervision of the manufacturer in a thorough, workmanlike manner.

Where specified, sloping roofs are to be Featherweight Reinforced Concrete Interlocking Slabs, the exposed surface of which is to present a smooth, permanent, red finish, and this color to penetrate the top one-half of the slab.

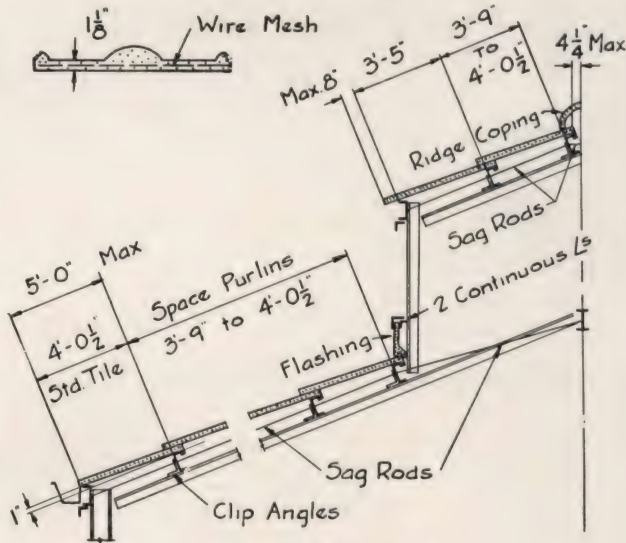
Each slab is to be reinforced with a sheet of galvanized cold drawn wire mesh accurately centered in the slab. The longitudinal wires to be spaced not more than 2 in. apart and cross wires woven around the longitudinal wires.

The longitudinal joints to be cemented with a high grade oil cement and a weather cap coat of highest grade elastic compound. The lap or cross joint to be a squeeze joint of high grade oil cement.

All trimmings, such as ridge roll, flashing slabs, finishing slabs, sawtooth ridges and ventilator collar slabs of the same specification as above, to be furnished as shown on the drawings.

Where shown on the drawings, Glass Insert Slabs are to be furnished. Each slab is to have a sheet of $\frac{1}{4}$ -in. wire glass 21×35 in. embedded in the concrete with an expansion cushion, during the process of manufacture of the glass insert slab, thus becoming an integral part thereof.

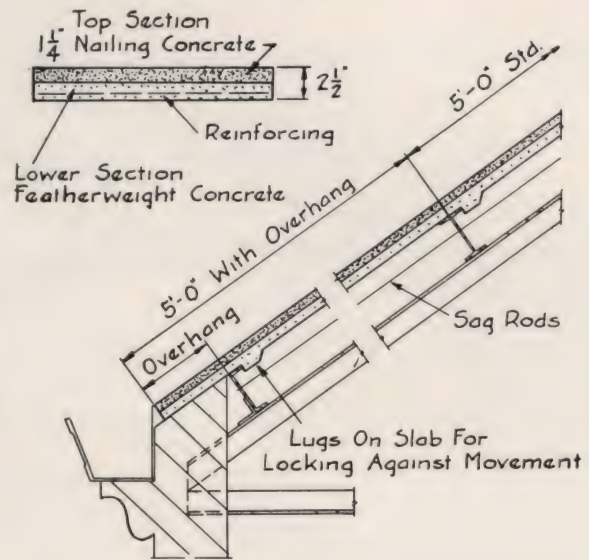
FEATHERWEIGHT CONCRETE INSULATING ROOF SLABS

INTERLOCKING SLABS
Also Made With Glass Inserts

Essential Data

For use on slopes of not less than 4-in. rise in 12.
No composition covering required.
Weight, 14 lbs. per sq. ft.
Standard stock size, 52 in. long, 24 in. wide, 1 1/8 in. thick.
To use standard 52-in. length space purlins 3 ft. 9 in. to 4 ft. 1/2 in. Special lengths made from 24 in. to 64 in.
Maximum purlin spacing, 5 ft.
Glass insert slabs made in 52-in. lengths to interchange with standard 52-in. slabs.

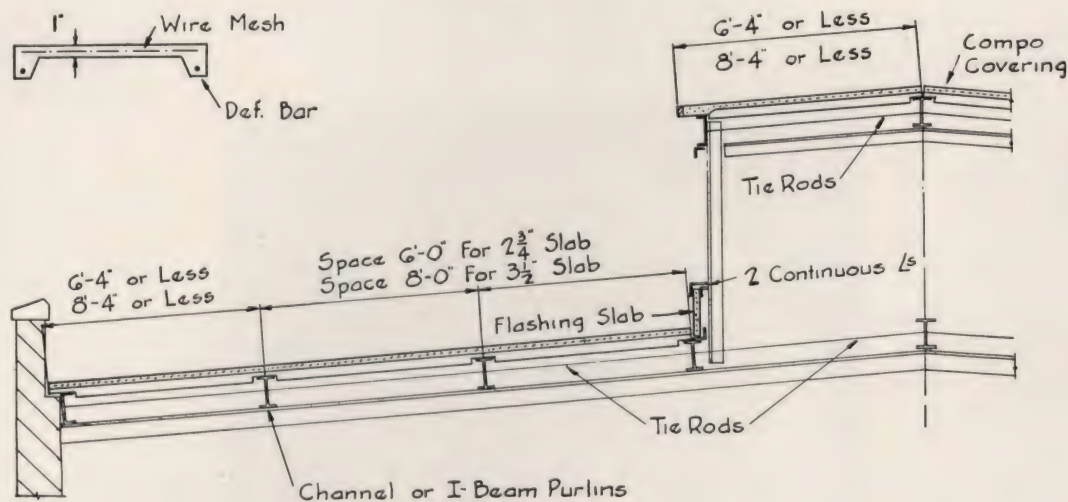
NAILING SLABS



Essential Data

Adapted to all roof structures of any slope.
The slabs present a smooth surface for application of ornamental tile, slate or metal. For standard *Nailing Slabs*, space I-beam purlins 5 ft. apart.
Special slabs made to maximum length of 6 ft.
Nailing Slabs are 2 ft. wide, with a layer of 1 1/4 in. of nailing concrete cast integrally on top and weigh 18 lbs. per sq. ft.

CHANNEL SLABS



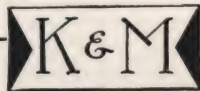
Essential Data

Adapted to all roof decks, flat or sloping. Composition or other covering required.
Space purlins 6 ft. for standard 2 3/4-in. channel slab, maximum 6 ft. 4 in. Weight, 10 lbs. per sq. ft.
Space purlins 8 ft. for standard 3 1/2-in. channel slab, maximum 8 ft. 4 in. Weight, 12 lbs. per sq. ft.
The slabs present a finished ceiling effect on the underside.

KEASBEY & MATTISON COMPANY

AMBLER, PA.

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- (1) INDUSTRIAL AND HOME INSULATION.
- (2) ACOUSTICAL TILE.*
- (3) ACOUSTICAL PLASTER.*
- (4) SOUND DEADENING.*

- (5) CALISTONE ROOF SLABS.
- (6) INSULATING CONCRETE AGGREGATE.
- (7) REFRACTORY INSULATION.
- (8) PULVERIZED FILLERS.

*For Pages Describing these Calicel Products, see File Index

CALISTONE ROOF AND FLOOR SLABS AND INSULATING CONCRETE AGGREGATE

General Description of Material and Purposes

Calistone is a light weight insulating concrete made from Calicel Concrete Aggregate mixed with Portland cement or gypsum and is used for the following purposes:

- (1) Roof slabs, over structural framing.
- (2) Floor slabs, over junior beams, bar joists, etc.
- (3) Monolithic insulation over concrete roof slabs.
- (4) Monolithic sound-deadening fill between floor sleepers or between rough concrete floor slab and finished floor, such as terrazzo, tile, compo, etc.
- (5) Monolithic insulation, either inside or outside of smoke flues, breechings, etc.

It is also used to a great extent in the industrial field as a monolithic, refractory insulator in the construction of dry kilns, furnaces, boilers, etc. Luminite or high alumina cement only is recommended as its cementing agent in the latter cases.

The Material and Manufacture

Calicel, basically, is highly expanded stone. It is a cellular mineral, a refractory insulator, a synthetic combined silicate of lime and alumina formed at temperatures in excess of 2000° F., being so cooled that the molten mass is expanded from 10 to 40 volumes. This highly cellular structure resembles petrified sponge. Subsequent refining and grading operations produce finished Calicel which serves as an aggregate for Calicel acoustical materials as well as thermal insulators.

Adaptability and Methods of Use

Calicel Concrete Aggregate is mixed with Portland cement and water in much the same manner as ordinary concrete aggregates. The resulting concrete, known as Calistone, is then deposited in the desired thickness (usually 2 to 3 inches) over a supporting member which may be metal lath, K & M corrugated or flat sheets, special steel deck (spans up to 7 ft. 0 in.), or concrete deck.

Certain of these supports serve as their own reinforcement, but in some cases it is essential to add reinforcement of wire mesh or rods.

Designing and Engineering Service

The uses of Calistone are so varied as to make it impractical to incorporate details in

this article, but the manufacturer maintains a skilled engineering force for consultation with architects and engineers, and welcomes discussion of individual problems. Further data, reports, etc., will be forwarded upon request.

Merits

Though Calistone, as constituted at present, is not represented as a structural concrete, it furnishes remarkable strength, particularly so, when its weight of approximately 50 pounds per cubic foot is considered—its strength being as great as, often far greater than, other similar-purpose fireproof materials of equal density.

It is absolutely vermin, rodent and fire proof.

Portland cement Calistone will not soften, disintegrate or dissolve when subjected to excessive saturation.

It is more free from expansion or contraction than standard concrete due to the nature of the aggregate.

Splendid sound-deadening and sound-absorbing qualities are had as Calicel Concrete Aggregate is essentially the same aggregate as used in the manufacture of Calicel Acoustical Tile and Plaster and Calicel Sound Fill.

The following data is from reports of Prof. J. C. Peebles of the Armour Institute of Technology:

Thermal conductivity of Calistone, B.t.u.'s per hour per 1 in. thickness .89%. Transmission in B.t.u.'s per hour per square foot per degree difference in temperature, including 5 ply roof covering:

3-in. thickness	.196
2½-in. thickness	.22
2-in. thickness	.251

Note: Insulation values are somewhat better when gypsum displaces Portland cement as a cementing agent.



A Single Grain of Calicel Magnified 20 Diameters

The unretouched photo shows the minute air cell construction that accounts for the superior insulating and sound deadening qualities of Calicel

Short Specification

Calistone, prepared in accordance with the specification of the manufacturer, KEASBEY & MATTISON COMPANY, Ambler, Pa., from Calicel Concrete Aggregate and Portland cement shall be placed in the following locations (or as indicated by plans); the installation being made as per manufacturer's instructions, by or under the supervision of, his distributor or approved contractor,

THE NAILCRETE CORPORATION

Manufacturer of the Original Nailing Concrete and Nailcrete Blocks
105 West 40th Street, NEW YORK, N. Y.

SELLING AGENTS IN ALL THE PRINCIPAL CITIES IN THE UNITED STATES

NAILCRETE (NAILING CONCRETE)



Nailcrete—Developed after extended laboratory research and tests in connection with economic construction methods has been in successful commercial use for 20 years.

Nailcrete is a cementitious, fibrous, all-mineral fireproof compound, containing no animal or vegetable matter, no acids, alkalis or any substance injurious to metals, wood or other construction materials coming in contact with it. Nailcrete is supplied in bags containing the correct quantity for the unit mix. It is mixed on the job with portland cement, screened sand and clean water, and screeded smooth and level.

Advantageous Qualities and Physical Properties—Nailcrete is absolutely fireproof and verminproof; will not shrink, swell, or rot; is unaffected by dampness, a poor conductor of heat and an effective sound deadener.

Nailcrete has the same compressive strength as 1-3-6 cinder concrete and is 20% lighter (weighs about 96 lb. per cu. ft.). Coefficient of expansion, also setting and drying periods are substantially the same as those of cinder concrete. Nailcrete calls for the same precautions against freezing, quick drying, etc., as are necessary with ordinary concrete.

Uses of Nailcrete—(a) **Subfloors**—Nailcrete is laid as a subfloor on top of the structural slab or floor arch, to which is directly applied wood flooring, cork tile, etc.

(b) **Reinforced Floor Slabs for Metal Lumber**—Nailcrete is used 2 in. thick on top of metal lath placed on metal lumber or bar joist floor beams.

(c) **Roof Coating**—A fireproof, rotproof nailing base 1½ to 2 in. thick directly on top of roof slab to receive tile, slate, copper, etc.

(d) **Reinforced Roof Slab**—A poured-in-place construction on rafters of steel, metal lumber or bar joists.

(e) **Precast Lightweight Roof Slabs**—Manufactured with reinforced all mineral Nailcrete Cinder Concrete in sizes to meet requirements. A structural slab and nailing base.

(f) **Plaster, Interior and Exterior**—For interior plastering,

especially for fireproofing, sound-insulating, and as a nailing base for wood paneling; for exterior plastering or penthouse walls, skylight curbs, etc., to receive the sheet metal covering.

Specifications for Nailcrete

Note: Always specify Nailcrete by name.

Materials—Nailcrete shall be made with portland cement and sand strictly in accordance with the specifications of the manufacturer. All sand shall be sharp, clean, and screened through ¼-in. mesh.

Preparatory Work—Immediately before Nailcrete is laid, the surface to be covered shall be swept broom-clean, thoroughly wetted and grouted.

Setting—All Nailcrete shall be allowed to set properly before being walked on.

Note: Ordinarily 2 days in summer and 3 days in winter.

Nailcrete Subfloors—On structural floor construction Nailcrete shall be laid 2 in. thick and screeded, and, if necessary, troweled to a level. When Nailcrete is dry, the surface shall be given a brush coat of asphaltic waterproofing before flooring is laid. Flooring to be nailed with 8d cut nails, driven at an angle of approximately 45°.

Note: For high class work specify (under the heading of Carpentry) 1 layer of tarred paper (not less than 2-ply) additional deadening felt, if desired, and the finish wood flooring to be used. Underflooring is never necessary with strip flooring but is recommended where parquet flooring is to be used.

On Metal Lumber Beams—Cover the floors of rooms, etc. (specify which ones are to be covered), with metal lath securely directed to the beams (not over 2 ft. apart) and on top of the metal lath put a bed of Nailcrete not less than 2 in. thick at the thinnest point, screeded level to receive the finish flooring specified under Carpentry.

Note: In high class work specify paper as above. Even in work of the highest class underflooring is unnecessary, as stated.

Nailcrete Roof Coating—The structural roof construction shall be covered with 2 in. of Nailcrete.

Note: If slate are thicker than ¾ in., consult THE NAILCRETE CORPORATION as to the thickness of the Nailcrete.

Reinforced Sloping Roof Slab—Cover steel rafters with self-centering lath (as specified by manufacturers) or pour in place fabric-reinforced Nailcrete slab in. thick. (See table for areas of steel and safe loads.)

Plaster—Interior—Plaster interior walls to an approved finish, true and even as per instructions of THE NAILCRETE CORPORATION.

Exterior—Plaster the exterior of penthouse walls, skylight curbs, etc., with Nailcrete plaster 1 in. thick in 2 coats, scratch and finish, troweled (or floated) true and even.

Note: If the Nailcrete plaster is to be applied to gypsum blocks, the blocks should be covered first with proper bonding material, and the Nailcrete is then to be applied while the bonding material is still tacky.

NAILCRETE SLABS—SAFE LOADS IN POUNDS PER SQUARE FOOT

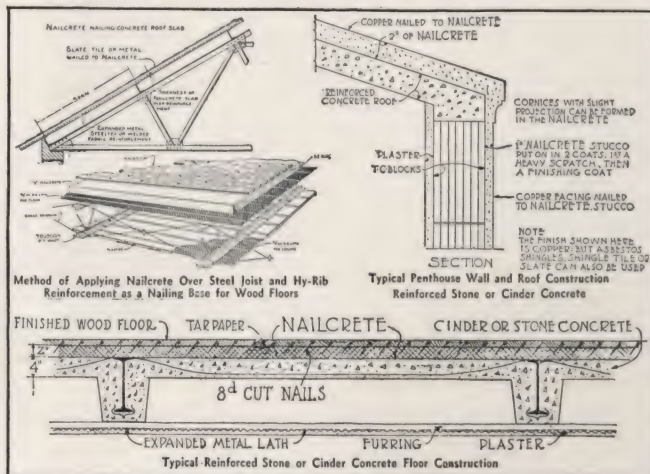
Gross sectional area of steel in sq. in. per ft. slab	Thickness of Nailcrete above steel	Span in feet									
		1½	2	2½	3	3½	4	4½	5	5½	6
¾-in. Hy-Rib, Ribplex or equal, .061 sq. in.	2 in....	480	312	176	122	...	...	...	...	...	...
	2½ in....	...	...	232	161	118	91	...	...	...	...
	3 in....	...	...	...	...	144	110	87	70	...	...
¾-in. Hy-Rib, Ribplex or equal, .1407 sq. in.	2 in....	...	...	...	158	114	87	...	...	...	...
	2½ in....	...	...	...	230	171	130	102	...	...	...
	3 in....	...	...	...	...	233	177	139	113	...	...
	3½ in....	...	...	...	...	...	228	180	146	121	...
	4 in....	...	...	...	...	...	...	238	193	159	134

Nailcrete weighs about 96 lb. cu. ft. or 8 lb. per in., 1 ft. square. Table based on WL/10. For WL/8 (or simple span), deduct 20% from above.

Brace self-centering lath to support wet Nailcrete.

Safe loads on spans above 6 ft. furnished on request.

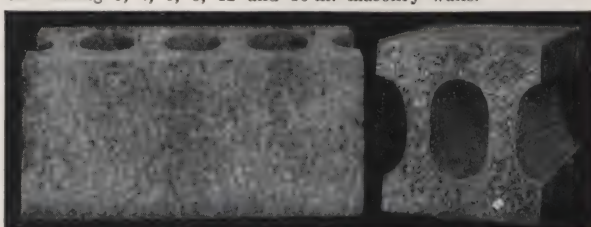
Total live and dead load on tile roofs: 2-ft. slab, 66 lb.; 2½-ft., 70 lb.; 3-ft., 74 lb.; 3½-ft., 78 lb.; 4-ft., 82 lb. per sq. ft.



Typical Examples of Nailcrete Construction

NAILCRETE NAILABLE CINDER CONCRETE BUILDING BLOCKS

Uses—Nailcrete Blocks are used in load-bearing walls, partition walls, and as an efficient and economical backup of cut stone, cast stone, and brick veneered walls. Nailcrete Blocks are furnished in all sizes useful in constructing 3, 4, 6, 8, 12 and 16-in. masonry walls.



8x8x16 Hollow Block

8x8x16 Half Block

Fireproof—Cinder concrete is accepted as one of the best fireproofing materials. Nailcrete Cinder Blocks, made of cinders, Nailcrete and cement are incombustible and extremely fire resisting.

Nailability and Nailholding—These outstanding features are largely due to the presence of Nailcrete in the blocks. They take and they hold nails. The lightest trim and moulding can be attached to interior walls; and shingles, siding or weatherboards to exterior walls.

Lightness—Because of the inherent lightness of the aggregates used—Nailcrete Blocks are among the lightest load-bearing masonry units made. This reduces the dead load and often permits the use of lighter steel with subsequent savings.

Underwriters' Blocks—Nailcrete Blocks have been tested and approved by the Underwriters' Laboratories, Inc., Chicago, and certified blocks can be supplied.

Specifications—For Plastered, Stuccoed or Exposed Exterior or Interior Walls—Load-bearing exterior and interior walls and partition walls will be of Nailcrete Nailable Cinder Concrete Blocks.

For Backup of Cut Stone, Cast Stone and Brick Walls—Backing of outside walls will be of Nailcrete Nailable Cinder Concrete Blocks.

PORETE MFG. CO.

Manufacturers of Lightweight Concrete Products

Porete Avenue, NORTH ARLINGTON, N. J.

TELEPHONE
Kearny 2-4070

Products

PORETE LIGHTWEIGHT CONCRETE:

Precast for Floor and Roof Slabs.

Porete Fill (Poured in Place).

Porete Floor Systems.

PORETHERM—Insulation.

PORETE NAILFILL—A Lightweight Nailing Concrete.

POREX SLABS—For Roofs, Floors, Ceilings and Walls.

Also Concrete Decks for Stadiums.

What Porete Is

Porete is a lightweight cellular concrete made of Portland cement and sand. It is of uniformly honeycombed structure and combines the durability of concrete with the lightness

of wood. Porete is made of a very rich cement mix and any reinforcing metal is thoroughly coated and protected against corrosion.

Porete can be cast in different weights from 19 lbs. per cu. ft. to 70 lbs. per cu. ft. and heavier. On account of the air cells which it contains, it is a good heat and sound insulator and a better fire resisting material than solid concrete. Its permanency is equivalent to that of concrete and its strength improves with age.

The PORETE MFG. Co., organized in 1920, is the pioneer in the development of lightweight cellular concrete and its adaptation to roofs and floors. The nailable Porete roof decks for steep roofs, as well as the various flat roof constructions, of which millions of square feet have been erected, are recognized as the best in the roofing field.

PRECAST FLOOR AND ROOF SLABS

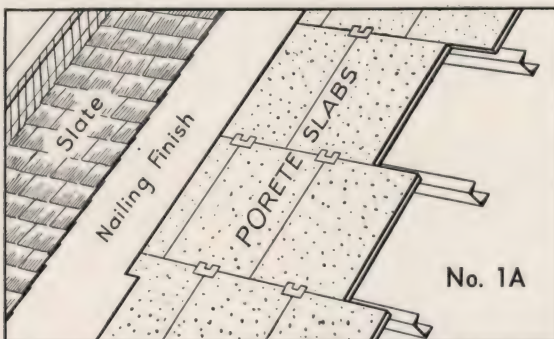
Slabs Made of Lightweight Aerated Concrete

No. 1A—Short Span Porete Slabs with Field Finish

Purlin spacing 2 ft. 8 in., thickness 1¾ in., weight 10 lbs. per sq. ft.; nailable; good heat insulation.

These slabs are reinforced with woven galvanized wire fabric. 1¼-in. thick slabs are clipped to channels or laid on T-irons and covered with a ½-in. nailing finish. This is the best deck for roofs of complicated nature intersected by hips, valleys and dormers. On roofs above 45° pitch, we recommend the slabs to be laid on T-irons as shown.

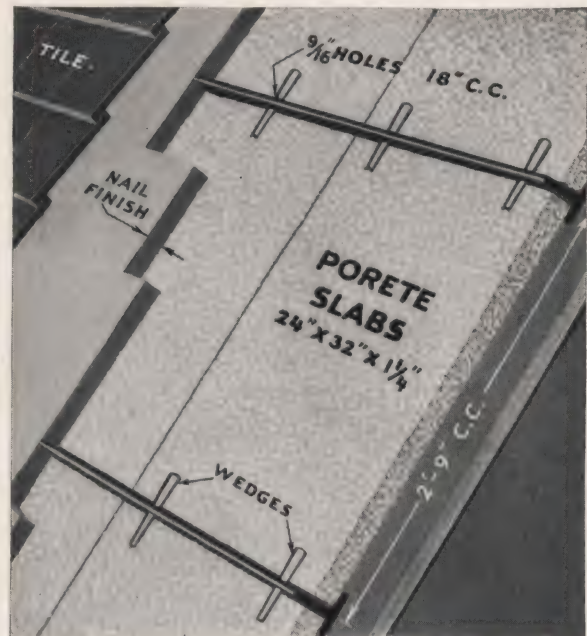
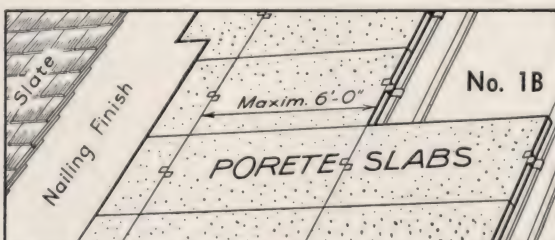
The short span precast slab construction with T-irons and wedge pins as shown in the cut on the right has become the standard for steep tower and mansard roofs. The exposure of such roofs to high winds at great heights demands a roof deck to which tile, slate, copper or lead roofing can be nailed with safety. Many of the most prominent skyscrapers with tower roofs in the east are covered with this construction.



No. 1B—Long Span Porete Slabs with Field Finish

Purlin spacing 3 to 6 ft., thickness 2 to 3½ in., weight 11 to 16 lbs. per sq. ft.; nailable; excellent heat insulation.

These slabs are reinforced with welded galvanized wire fabric. They are laid on channels or I-beams to which they are

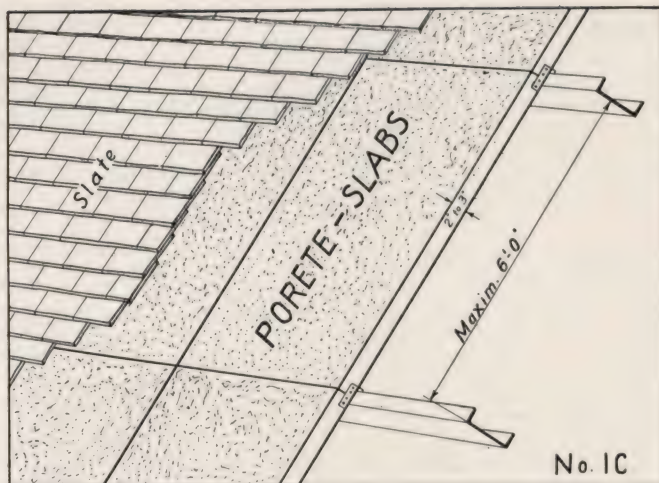


fastened with steel clips. They are covered with a ½-in. nailing finish. The steel purlins can be laid horizontally or in vertical planes. This is the best deck for sloped roofs with large unbroken areas as on school buildings, churches, etc. It is advisable to lay out the steel with a spacing as uniform as possible to avoid many different size slabs. This deck has very high heat insulating value. Due to the monolithic field finish it makes a first grade foundation for the roofing particularly where slate, tile or sheet metal roofing has to be nailed up.

No. 1C—Long Span Porete Slabs without Field Finish

Purlin spacing 3 to 6 ft., thickness 2 to 3½ in., weight 11 to 16 lbs. per sq. ft.; nailable; excellent heat insulation.

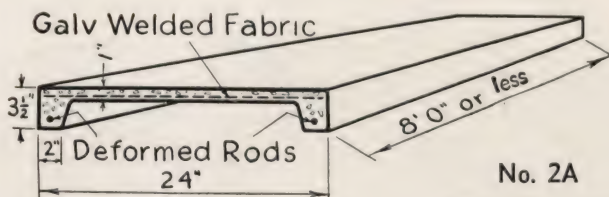
These slabs are reinforced with welded galvanized wire fabric. They are used on the same kind of roofs as the Long Porete Slabs with field finish under No. 1B. The main difference is that these slabs are cast to accurate thickness so that when they are laid tight together they form a smooth bed for the roofing which goes on top of it without the application of a field finish. (See illustration on top next page.)



No. 2A—Channel Slabs

Made of dense vibrated concrete using lightweight aggregate. No field finish. Purlin spacing 5 to 8 ft., thickness 3½-in. leg, 1-in. web; weight, 12 to 14 lbs. per sq. ft. depending upon aggregate; not nailable; fair heat insulation.

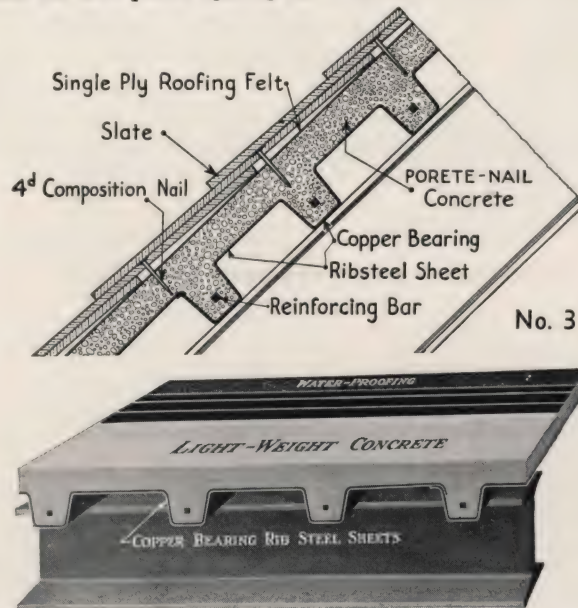
These slabs are reinforced with a deformed steel bar in each leg and a welded wire fabric in the web. They are laid on channel or I-beam purlins, and the joints are pointed up with elastic cement. They make the most economical roof deck for large unbroken roof areas and are particularly well suited for warehouses, manufacturing plants, piers, etc.



No. 3—Rib Steel Roof Decks

Made of copper bearing sheets of No. 20 to No. 24 gauge covered with a field concrete finish, purlin spacing 3 to 10 ft., thickness of slab 3 to 3½ in., weight 9 to 16 lbs. per sq. ft., can be made nailable; fair heat insulation.

These decks are recommended particularly on buildings for large unbroken roof areas with flat or sloped roofs where great rigidity of the roof deck is required. The ribs are 1½ in. deep on standard and 2 in. deep on supersheets, and are spaced 6 in. on centers. The sheets are laid on structural steel purlins and securely fastened to them with clips. After the sheets are laid, they are covered with concrete. On flat roofs, the usual application is 1 in. of cement grout, on sloped roof 1½ in. of nailing concrete suitable for the nailing of slate, tile or metal roofing. The ribs are reinforced with independent steel bars or with heavy sheet metal "Z" bars welded to the bottom of each corrugation. The sheets are painted with a shop coat of either black asphaltum or aluminum paint on the bottom. This construction is suitable not only for medium spans but also purlin spacing up to 12 ft.



PORETE FILL (Cast in Situ)

Porete is made by aerating a slurry of Portland cement and small aggregates. This aerated mixture is poured to the proper level where it sets; no expansion takes place afterwards. The weight per cu. ft. of the final cellular concrete is predetermined. *An ordinary concrete mixer of the tilting type can easily be adapted to pour this cellular concrete.*

Porete Fill can be made in any weight from 19 lbs. to 90 lbs. per cu. ft. Fills which weigh 32 lbs. per cu. ft. and less are designated as PORETHERM on account of their high insulating qualities. The table on right gives the insulating value for different weights compared with other materials.

Poretherm 32 As an Insulating Fill for Roofs and Floors

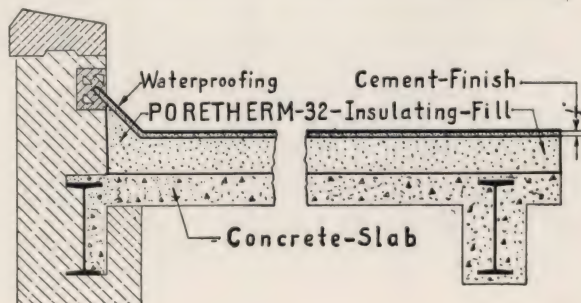
PORETHERM 32 is a low cost, high grade insulation material that can be poured on the job. It consists of almost nothing else but Portland cement. 2.1 in. in thickness have an insulation equivalent to 1 in. of cork. It is a heat and sound insulating material par excellence, because it is permanent and fireproof. Unlike materials of vegetable or wood fibre, it does not deteriorate when continuously exposed to moisture. It is odorless, permanent and fungi proof. PORETHERM is solid, uncompressible under ordinary loads and does not settle or sag like loose insulating materials. It is cast monolithically without joints, which are liable to decrease the insulation.

When used as an insulating fill on roofs, it is not necessary to grade the structural slab accurately, as PORETHERM being not much more expensive than concrete, when poured on the structural slab will fill up all the irregularities. It can also be used for forming crickets for drainage. On account of all these features and the low cost of the raw materials, PORETHERM 32 is today one of the most economical insulating materials on the market. The Roof Fill is usually covered with a 1:3 cement finish ¼ in. thick before the roofing is applied.

PORETHERM 32 is also made in precast blocks for heat and sound proof partitions. Size 12 in. x 30 in. x 3 in. to 6 in. thick.

PORETHERM 19—Weighs 19 lbs. per cu. ft., is recommended for high and low temperature insulation, and is particularly economical on floors and roofs of refrigerating buildings.

Materials	Wt. per cu. ft., lbs.	Coeff. Heat Cond. B.T.U.'s	Wall thickness for same insulation, in.
Cork Boards	9	.30	1.
Poretherm 19	19	.37	1.3
Porex Board	24	.46	1.6
Poretherm 32	32	.63	2.1
Porete for Floor Fill	45	.80	2.7
Porete for Structural Slabs	65	1.1	3.7
Wood Dry	40	.9	3.0
Brick Wall	110	4.4	15.0
Concrete	140	8.0	27.0



Floor Fills Heavier Than 32 Lbs. per Cu. Ft.

Floor Fills to be poured on top of structural floors are made of an aerated concrete weighing 45 to 90 lbs. per cu. ft., the weight depending upon the requirements. They are cast from 2 to 4 in. thick or more.

This fill provides an insulation against heat and sound and a medium to fill the space where conduits, pipes and sleepers are placed with no danger of deterioration. Cement, terrazzo, composition or wooden floors can be applied to this directly.

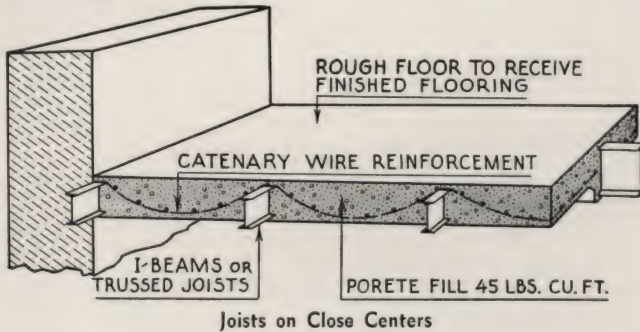
For heat and sound insulation, particularly in apartments, hotels and hospitals, where the transmission of noise from one floor to another is objectionable, Porete Fill is unsurpassed. Its cleanliness, fireproofness and permanency make it particularly desirable in this class of buildings. This lightweight fill is not made to hold nails.

All these floor fills can be furnished and erected by the PORETE MFG. Co. or they can be applied by the Building Contractor under the supervision of the PORETE MFG. Co.

FLOOR SYSTEMS

Steel Beam and Lightweight Porete Fill Floor System

In this system the steel beams, which can be standard rolled sections, J & L Jr. Beams or Trussed Joists, are completely embedded in the lightweight concrete weighing 32 to 50 lbs.



per cu. ft., the weight depending upon the loads and span. A catenary wire reinforcement over the beams is used.

This Floor System is exceedingly simple and flexible. The steel beams are designed to carry the necessary loads. A temporary centering is hung up from the steel beams, so that no expensive shoring is needed. Pipes and conduits can be directly embedded into the fill. Holes can easily be cut where required.

When the beams are on close centers (24 to 30 in.) the floor slab can be as thin as 6 in. When 4-in. beams are used this leaves 1 in. below and 1 in. above the beams.

For close spacing of the beam centers, a fill weighing only 32 lbs. per cu. ft. will develop all the necessary strength to carry the usual live loads. This light fill is covered with 1/4-in. thick 1:3 rough cement finish which serves as a construction floor until the finished floor is put on top. This makes an exceedingly light floor which weighs only about 20 lbs. per sq. ft. for a thickness of 6 ins.

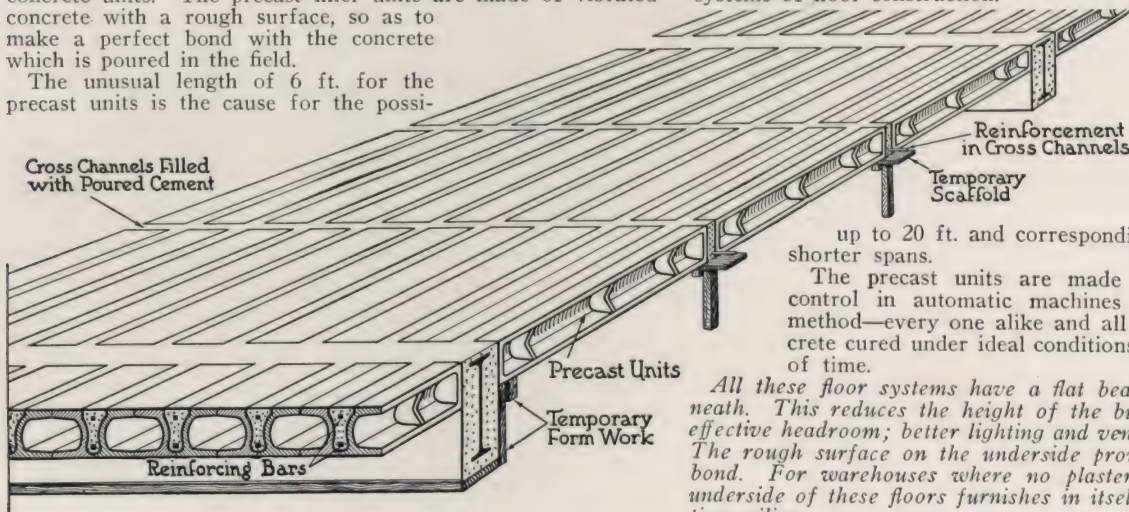
For wider spacing of the beams up to 8 ft. the thickness of the fill should not be less than 8 in. and the weight 45-55 lbs. per cu. ft., depending upon the load and spacing.

Long Span Precast Unit Floor System

This is a one-way reinforced concrete slab consisting of T-beams poured in place between 6-ft. long precast hollow concrete units. The precast filler units are made of vibrated concrete with a rough surface, so as to make a perfect bond with the concrete which is poured in the field.

The unusual length of 6 ft. for the precast units is the cause for the possi-

bility of quicker erection with less labor and for a minimum of temporary framing and shoring not possible with other systems of floor construction.



The Porete Long Span System is based on standard reinforced concrete practice. This floor system, without a cement finish on top, is good for 75 lbs. per sq. ft. live load for spans

up to 20 ft. and correspondingly higher loads on shorter spans.

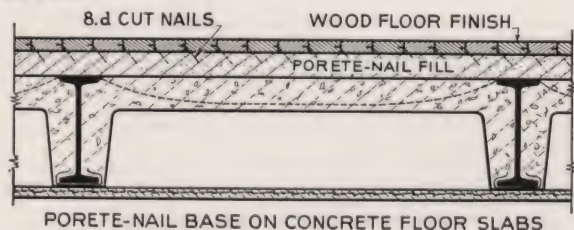
The precast units are made under rigid factory control in automatic machines using the vibrating method—every one alike and all of high quality concrete cured under ideal conditions for the right length of time.

All these floor systems have a flat beamless ceiling underneath. This reduces the height of the building for the same effective headroom; better lighting and ventilation is obtainable. The rough surface on the underside provides a good plaster bond. For warehouses where no plastering is required, the underside of these floors furnishes in itself a light and attractive ceiling.

PORETE NAILFILL

Porete Nailfill is an all-mineral compound principally composed of asbestos. When mixed with Portland cement, sand and water, it forms a plastic mortar that sets similar to concrete, and when matured it becomes an elastic, lightweight concrete, into which nails can be driven as readily as into wood, and in which the nails will hold. As it consists entirely of minerals, it is fireproof and verminproof. Like concrete its strength improves with age; it will not disintegrate and will always retain its nailing qualities.

Porete Nailfill concrete forms a permanent, resilient, lightweight nailing base. A 2-in. layer is placed on top of the concrete slab with which it forms an excellent bond. The wood flooring can be nailed directly to this base, as soon as it is set and dry. The weight of Porete Nailfill concrete is 96 lbs. per cu. ft.



The PORETE MFG. Co. will furnish and erect all these products and systems and guarantee satisfactory results or it can furnish the necessary supervision for the erection.

The Engineering Dept. of the PORETE MFG. Co. is ready to make suggestions regarding the steel layout so as to attain the best co-operation for a most economical design.

POREX SLABS

Made of Portland Cement and Mineralized Wood Fibre

Porex Slabs are made of high grade mineralized wood fibre bound under high pressure with Portland cement. Being bound with Portland cement, which is insoluble in water, the Porex Slabs will stand up under continuous exposure to water. For this reason they can be stored out of doors in the rain and frost without being damaged. The materials of which they are made are straight Portland cement with a tough mineralized wood fibre as an aggregate.

Porex Slabs are odorless, vermin and fungi proof; they are highly fire-resisting. Covered with $\frac{1}{2}$ -in. cement plaster on the fire side, they will resist a fire of 1700° Fahr. for over an hour.

Due to their light weight Porex Slabs are excellent for heat and sound insulation. They can be sawed like ordinary lumber. On account of the large size slabs, covering 11 sq. ft., the labor cost for erecting them is low.

Because of its porous texture, Porex has a high sound absorption. When used on ceilings or walls it will provide great acoustical qualities combined with an attractive surface finish of natural gray color. The exposed surface can be painted any suitable color, and it can be cleaned easily with a brush.

Porex Slabs are 20 in. wide x 80 in. long, 1 in. and $1\frac{3}{4}$ in. thick, covering an area of 11.1 sq. ft. Nine slabs have an area of 100 sq. ft. The 1-in. slabs weigh 2 lbs. per sq. ft. and the $1\frac{3}{4}$ -in. slabs 4 lbs. per sq. ft.

Porex Roofs and Floors

$1\frac{3}{4}$ -in. Thick Porex

The $1\frac{3}{4}$ -in. slabs are recommended as floor and roof slabs on wooden or steel joists up to 24-in. centers. When used in this way they are usually covered with a thin cement grout $\frac{1}{4}$ in. thick. On floors this makes a good construction floor until the finished floor is ready to be set up.

On roofs when slate or tile has to be nailed up, a $\frac{1}{2}$ in. thick Porete Nail Finish should be applied instead of the cement finish.

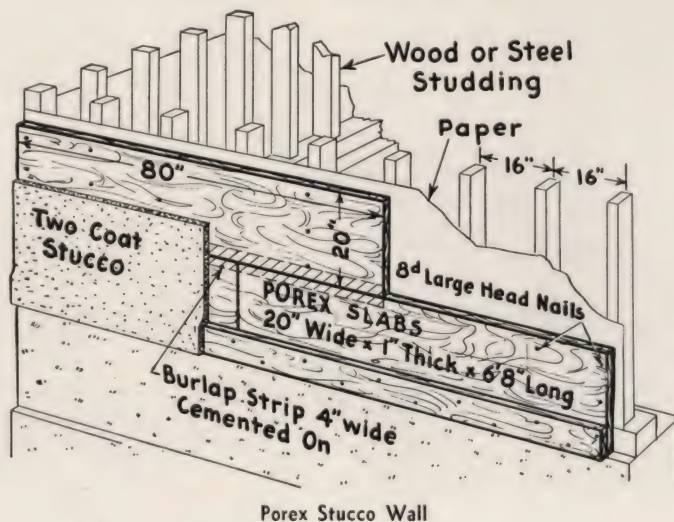
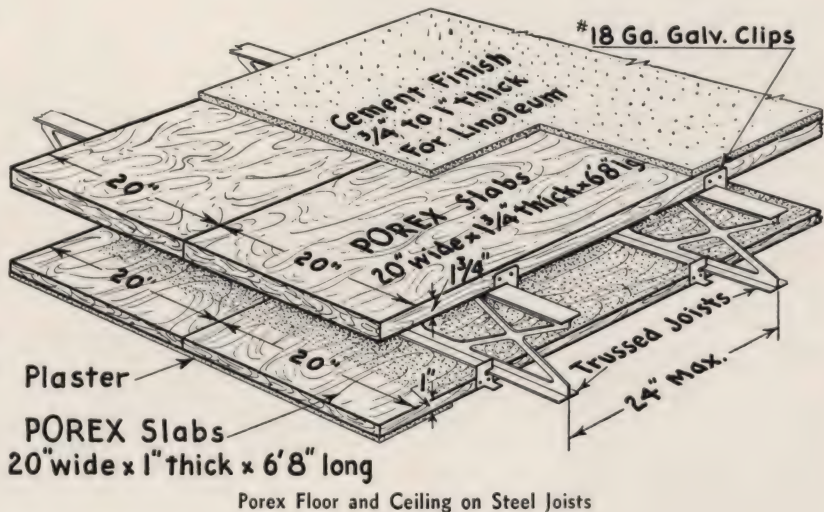
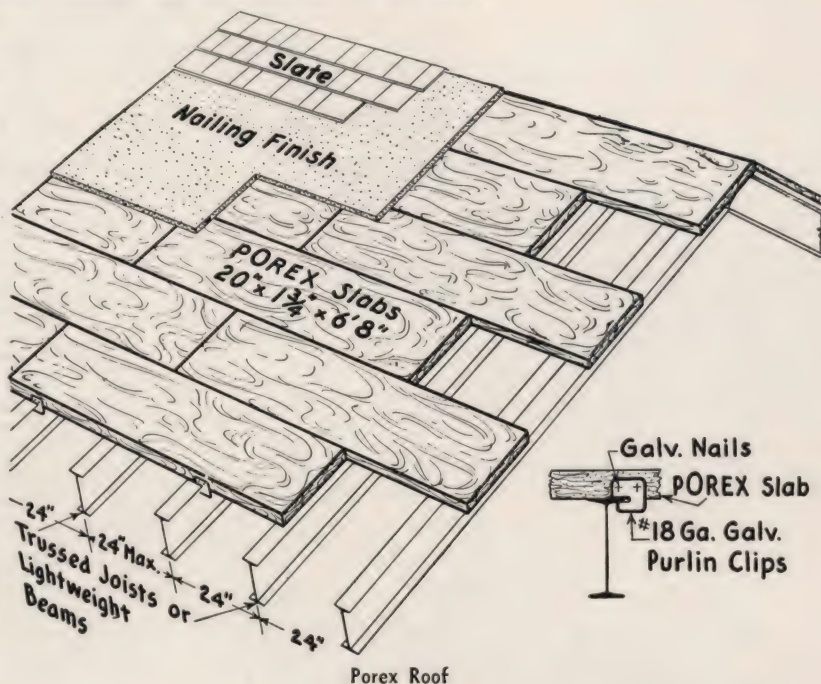
STRENGTH OF POREX FLOOR SLABS $1\frac{3}{4}$ -IN. THICK

Cement Finish Thickness, in.	Total Thickness of Slab, in.	Spacing of Joists, in.	Breaking Load, lbs. per sq. ft., uniform
None	$1\frac{3}{4}$	24	210- 270
$\frac{1}{4}$	2	24	240- 360
$\frac{1}{2}$	2	16	800-1000

Porex Slabs for Stucco Walls

Porex Slabs are nailed to the upright studs on 16-in. centers over a waterproofing paper, or they are fastened to steel framing with special clips. After they are erected they are covered with two coats of cement stucco. Their rough surface makes an excellent bond with stucco, and the stucco is not affected by the materials of which the Porex Slabs are made.

The 1-in. thick Porex Slabs are also economical for fireproof ceilings under wooden or steel joists in basements and attics; for forms or centering of concrete slabs; and for furring of brick and stone walls.



THE GEO. RACKLE & SONS CO.

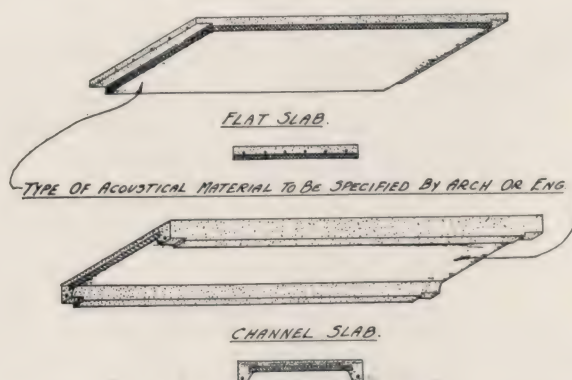
Station D
CLEVELAND, OHIO

CONCRETE ROOF SLABS OF EXTRA QUALITY AND STRENGTH

Rackle Acoustical Roof Slabs

These slabs, when used for roof decks for schools, churches, auditoriums, gymnasiums, factories, etc., accomplish three important objectives, namely, fireproofing, adequate insulation, and sound absorption, which is now recognized as being so important to meet modern ideas of efficiency and general welfare. This modern type of construction accomplishes in one unit what required three individual operations by former methods. Where economy is paramount no further decoration is necessary.

STANDARD DETAILS OF FLAT & CHANNEL TYPE
ACOUSTICAL ROOF SLABS



RACKLE STANDARD ROOF SLABS

Type of slab	Standard length	Absolute max. length	Thickness	Width	Weight per sq. ft.	
					Gravel	Haydite
Flat	5 ft. 0 in.	5 ft. 6 in.	1 1/2 in.	2 ft. 0 in.	17 lbs.	12 lbs.
Flat	5 ft. 6 in.	6 ft. 0 in.	1 3/4 in.	2 ft. 0 in.	20 lbs.	15 lbs.
Flat	5 ft. 6 in.	6 ft. 6 in.	2 in.	2 ft. 0 in.	23 lbs.	18 lbs.
Channel	6 ft. 0 in.	6 ft. 8 in.	2 3/4 in.	2 ft. 0 in.	15 lbs.	11 lbs.
Channel	6 ft. 8 in.	8 ft. 0 in.	3 3/4 in.	1 ft. 6 in.	18 lbs.	14 lbs.
Channel	8 ft. 0 in.	8 ft. 0 in.	3 3/4 in.	2 ft. 0 in.	20 lbs.	18 lbs.
Nailing Flat	6 ft. 0 in.	6 ft. 0 in.	2 1/2 in.	2 ft. 0 in.	22 lbs.	18 lbs.

Note: Add 7 lbs. per sq. ft. and 1 1/4 in. to thickness for nailing concrete on channel slabs.

Rackle Nailing Concrete Roof Slabs

A standard roof slab is surfaced with 1 1/4 in. of nailing concrete, a product of our own laboratory and the result of years of experience and experimentation. It is vibrated monolithic with the structural concrete. The ornamental roofing is nailed directly to the slab quickly and with low labor cost. The enduring nature of the slab eliminates maintenance and replacement expense.

Rackle Gravel Concrete Roof and Floor Slabs

Either regular or nailing concrete roof slabs will be furnished made of gravel concrete instead of Haydite when specified.

Specifications for Rackle Roof and Floor Slabs

(1) **Strength**—The roof slabs shall be composed of reinforced concrete (Haydite) (Nailing) (Gravel) aggregate as manufactured by THE GEO. RACKLE & SONS CO., Cleveland, Ohio, or equal. Each slab shall be sufficiently strong to support a uniform load of 250 lbs. per square foot 28 days after manufacture, when tested with the maximum span used on the roof.

(2) **Dimensions**—Roofing slabs shall have straight, perpendicular edges and true, unwarping surfaces. Outside dimensions shall correspond accurately to the sizes shown on the plans. All cracked or broken slabs shall be rejected.

(3) **Details**—The concrete slab contractor shall design and submit details to the architect for approval. These details are to be based upon the roof plans and details of the architect and steel fabricator. Manufacture of slabs of special size or shape shall not be started until approval of the details submitted.

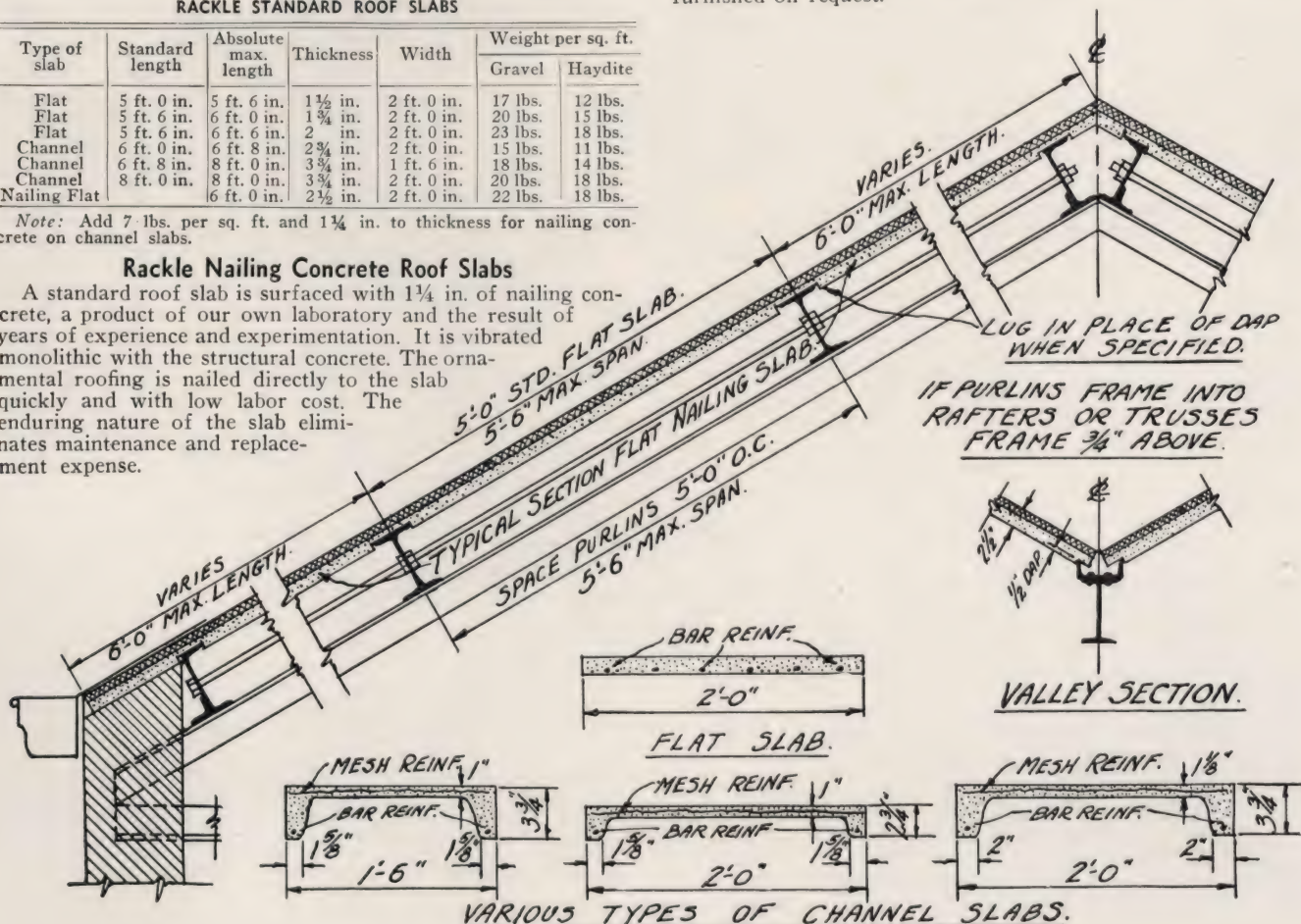
(4) **Notification**—The general contractor shall notify the concrete slab contractor one week in advance that the roof will be ready for the application of slabs.

(5) **Erection**—All slabs are to be erected in a thoroughly workmanlike manner. Joints are to be pointed on upper side with mastic cement. The completed work must present a smooth surface, ready for the application of the composition or ornamental covering.

Other Rackle Products

Rackle Cast Stone, a precast concrete building material of real quality, beauty and permanence.

Macotta, a metal covered concrete for complete trim, spandrels, medallions and other decorative uses. Complete information furnished on request.



TRUSCON STEEL CO.

Cement Tile Division

WORKS AND GENERAL OFFICES

Caniff Avenue and Grand Trunk R. R., DETROIT, MICH.

OFFICES IN PRINCIPAL CITIES

RED RIB TILE
SELF WEATHERING

FLAT
SLAB

CHANNEL
TILE

TYPE	RIB TILE	FLAT SLAB	2 $\frac{3}{4}$ " CHANNEL TILE	3 $\frac{3}{4}$ " CHANNEL TILE
WIDTH	24" } STOCK SIZE	24" } STOCK SIZE	24"	24" | 18"
LENGTH	4'-4"	5'-0"	6'-8" MAX.	8'-0" MAX. | 9'-0" MAX.
THICKNESS	WEB - 1 $\frac{1}{8}$ "	1 $\frac{5}{8}$ "	LEG - 2 $\frac{3}{4}$ " - WEB - 1"	LEG - 3 $\frac{3}{4}$ " - WEB - 1"
WEIGHT HAYDITE	16 LBS.	13.5 LBS.	10.5 LBS.	12 LBS. | 13.5 LBS.
PER SQ. FT. SAND	17 LBS.	19 LBS.	16 LBS.	17.5 LBS. | 19 LBS.
REINFORCEMENT	WELDED GALV. MESH	WELDED GALV. MESH	MESH & 2 DEF. BARS	MESH & 2 DEF. BARS
ROOF PITCH	$\frac{1}{5}$ PITCH OR GREATER	FLAT OR PITCHED	FLAT OR PITCHED	FLAT OR PITCHED
ROOFING	SELF WEATHERING	COMP. ROOFING REQ'D	COMP. ROOFING REQ'D	COMP. ROOFING REQ'D
PURLIN SPACING	4'-0 $\frac{1}{2}$ " MAX. - 3'-9" MIN.	5'-0" MAX.	6'-8" MAX.	8'-0" MAX. | 9'-0" MAX.

Truscon Rib Tile

This reinforced cement roofing tile is self-weathering and is laid directly on the roof purlins. It is fireproof, watertight, of light weight, economical, not only in first cost, but in its permanence without upkeep expense. These tile, together with the necessary trim, are furnished in red color and add materially to the architectural beauty of any building.

Truscon Glass Insert Tile

These reinforced tile are exactly the same dimensions as the standard rib tile and are interchangeable with them. The glass is inserted after the tile is laid and glazed from the outside. Provides increased light over entire roof area or over certain operations as required. Should a glass become broken it can readily be replaced without disturbing the tile.

Truscon Haydite Flat Slabs

These precast reinforced factory-made flat slabs are laid directly on the supporting structural steel. Joints are cemented ready for application of composition roofing. The erection labor is speedily performed without interference with the work of any other trade. No centering or costly form work is required. Light weight—made from Haydite aggregate—fireproof, economical first cost, with no maintenance. Vibrated to give extreme density and solidity. Adaptable for both flat and pitched roofs.

Truscon Haydite Channel Slabs

The channel section design of these slabs permit light weight construction, where longer spans than practical for flat tile are required. This type of slab is used under the same conditions and present the same advantages as the flat slabs.

Truscon Nailing Concrete Slabs

Where it is desirable to nail an ornamental roof covering and at the same time retain fireproofness, Truscon Nailing Slabs have been developed. The lower portion is of structural concrete and the upper 1 1/4 ins. of nailing concrete. The base portion may be either the flat type or the channel type, with a maximum span of 5 ft. 4 ins. and 6 ft. 8 ins. respectively.

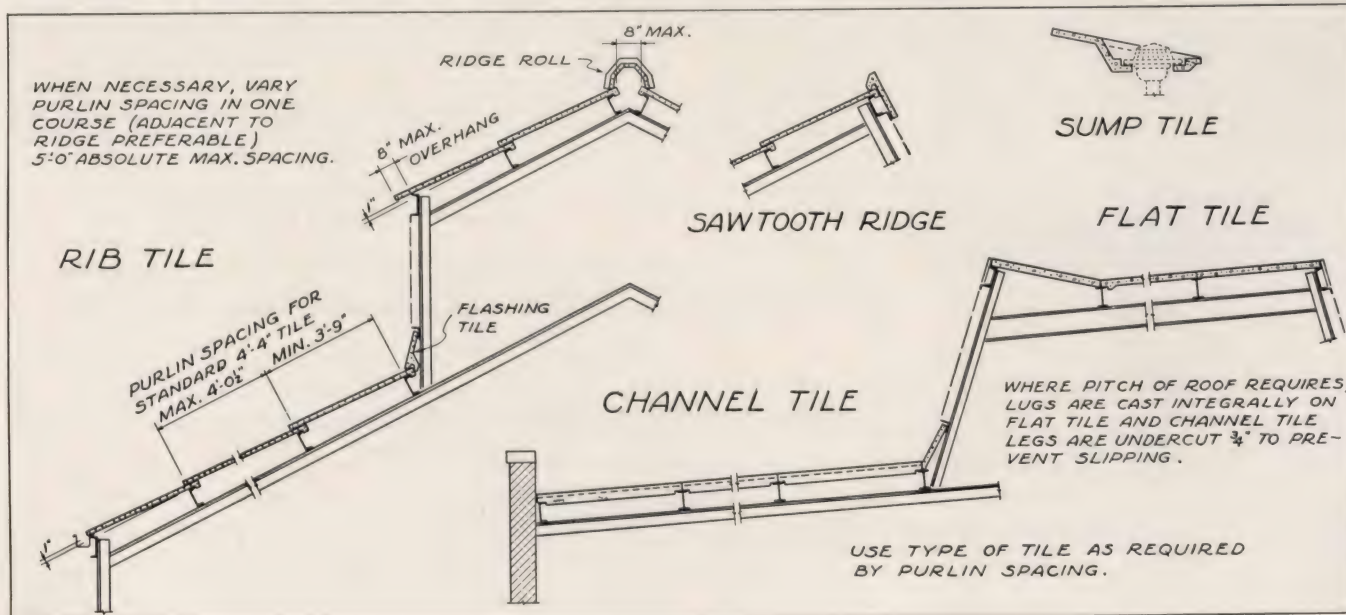
All of the foregoing types are properly reinforced and only the best materials are used.

Concrete mixes are all scientifically controlled by weight and all slabs are cured under constant temperature.

Being factory made, rigid inspection is enforced, which insures uniform excellence in composition, workmanship and results—a standardized product of extreme accuracy.

Installation made as easily in winter as in summer.

List of important installations, such as General Motors, Ford and others gladly sent on request.



LATHROP-HOGE GYPSUM CONSTRUCTION CO.

Gypsum Floors and Roofs

Neave Building, CINCINNATI, OHIO

BRANCH OFFICES

BUFFALO, N. Y., 190 Delaware Avenue
CHICAGO, ILL., 111 W. Washington Street
DALLAS, TEX., Burt Building

DETROIT, MICH., 413 Stephenson Building
MINNEAPOLIS, MINN., 700 National Building

NEW YORK, N. Y., Graybar Building
PITTSBURGH, PA., 614 Union Bank Building
ST. LOUIS, MO., 859 Goodfellow Avenue

REPRESENTATIVES IN OTHER PRINCIPAL CITIES

Products

MONOLITHIC GYPSUM FLOOR and ROOF CONSTRUCTION:

Standard Suspension Type.

Hoge Subpurlin Type (U. S. Patent 1,464,711;
Canadian Patent 241,477).

Enclosed Subpurlin Type (U. S. Patents 1,721,393,
1,814,387; Canadian Patent 254,632).

La-Ho-Co Precast Type.

La-Ho-Co Steel Roof Decks (U. S. Patent
1,709,028).

Construction Service

This company, backed by over 20 years' experience in gypsum construction, is at your service for advice and estimates for the above types of construction installed complete in any part of the world.

Advantages of Subpurlin Types

The subpurlin types of construction have all the advantages of light weight, rapid erection, high insulation properties, fire resistance, vibration resistance, permanence, strength and excellent undersurface appearance.

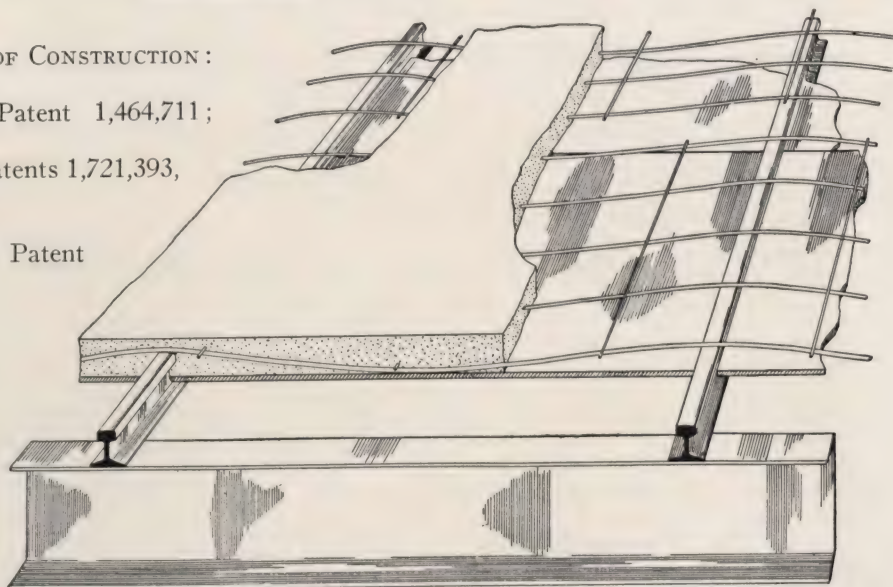
The simplicity of the subpurlin designs permits adaptation to any layout of supports by varying the size of subpurlin in accordance with standard structural design. Subpurlins bear on walls and no special bracing of purlins is required as with other designs.

In replacement of old roofs and floors where applications to framing are difficult, or where a uniform paneled undersurface is desired, its use has been found particularly advantageous.

Subpurlin Types of Monolithic Gypsum Floor and Roof Construction

The approval of architects, engineers, and owners throughout the United States and Canada is convincing proof that the Hoge and the Enclosed subpurlin types are well suited to the great majority of conditions, and conform readily to the standards of design and appearance required by architects.

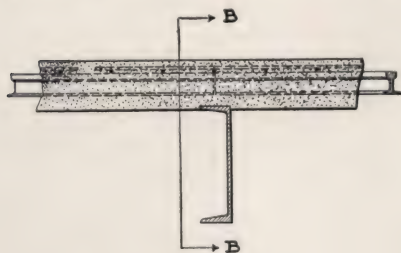
Hoge Subpurlin Type—In the Hoge type small subpurlins are laid about 32 in. apart on the top of walls, beams or purlins spanning the distance between beam or wall supports.



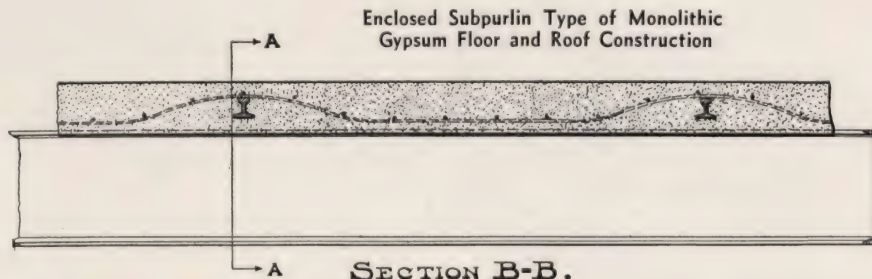
Hoge Type of Monolithic Gypsum Floor and Roof Construction

On the lower flanges of the subpurlins are supported $\frac{3}{8}$ -in. standard gypsum board, insulation or other composition board, with joints made over purlins to form a solid undersurface, paneled by the lower flanges of the subpurlins. The subpurlins are designed to carry all loads, which are transferred to them by continuous mesh reinforcement running across and resting over top of the subpurlins. Standard gypsum composition is poured in place over the gypsum board or insulation board and finished smooth to the required slab thickness, ready to receive the roof or floor finish. The undersurface can be left with the attractive composition board finish or may be decorated as desired.

Enclosed Subpurlin Type—Where fireproofing or greater insulation value is desired, the subpurlins are supported on the purlins or blocked above the top of purlins with insulating material. Removable forms are so placed as to permit covering the bottom of the subpurlins with $\frac{3}{4}$ -in. or more of gypsum composition, leaving a solid, plain gypsum undersurface even with the top of the purlins, the full thickness of the slab being above the superstructure, yielding maximum insulation value.



SECTION A-A.



SECTION B-B.

LA-HO-CO STEEL ROOF DECKS

La-Ho-Co Steel Roof Decks are offered to suit those conditions where a less permanent type deck, having a lighter weight or less insulating value may be found satisfactory for the service required.

Galvanized copper-bearing sheets are used for all parts of La-Ho-Co Steel Decks where the steel is under $\frac{1}{8}$ in. in thickness. Specifications and other data relating to La-Ho-Co Steel Decks will be sent on request.

NATIONAL GYPSUM COMPANY

Monolithic Poured-in-Place Gypsum Floor and Roof Construction

GENERAL OFFICES
BUFFALO, N. Y.

This Type of Construction, in Use for Almost a Half Century, Has Been Further Improved by a Patented Method Which Makes This System Preferable from Every Standpoint . . . Quickly Constructed, Permanent, Fireproof, Inexpensive



Poured-in-Place Gypsum Roof Construction Which Actually Becomes An Integral Part of the Main Steel Construction
Withstands vibrations and will resist storms and cyclones sufficient in force to destroy roofs of conventional design

SIX OUTSTANDING ADVANTAGES

1. **Light Weight**—Slab weighs only one-third as much as concrete, thus reducing the dead load and decreasing the cost of supports and foundations.
2. **Rapid Construction**—Slab may be used within an hour, and the roof covering can be placed if desired the following day.
3. **High Insulation Value**—Four times the insulation value of concrete. Reduces fuel consumption and heating equipment requirements. A building that is warmer in winter and cooler in summer.
4. **Fireproof**—Gypsum construction as fireproofing for steel has successfully passed numerous fire tests, and is generally recognized as being equal to other material as fireproofing for steel work, with a minimum of dead load.
5. **Vibration Crack Resistant**—Owing to the toughness and elasticity of the gypsum composition there is a noticeable absence of vibration cracks on all installations of this material.
6. **Low Maintenance Cost**—Repairing and maintenance cost is low. Slab is easily cut where changes in construction are necessary. Nails can be driven in slab to secure slate, tile, etc.

Monolithic Gypsum construction for floors and roofs (gypsum fibre concrete with steel reinforcing) has long been favored for its permanence and economy.

The natural advantages of this construction have been further enhanced by a patented method which permits of more rapid installation and incidentally may be designed for any required loading condition.

The roof construction design, absolutely perfect

from an engineering standpoint, permits the roof to become an integral part of the main steel construction—the undersurface providing an attractive ceiling that requires no decoration.

Speed of erection, permanence, effective insulation and fireproofing, plus low initial cost combine to make this system outstanding. For further details, please write National Gypsum Company, Buffalo, N. Y.

STRUCTURAL GYPSUM DIVISION

AMERICAN CYANAMID AND CHEMICAL CORPORATION

(FORMERLY STRUCTURAL GYPSUM CORPORATION)

EXECUTIVE OFFICES

30 Rockefeller Plaza, NEW YORK, N. Y.

TELEPHONE Circle 7-0100

SALES OFFICES IN THE PRINCIPAL EASTERN CITIES

For Gypsteel Gypsum Partition Tile, Beam and Column Covering and Gypsteel Gypsum Plasters, see File Index

Product

GYPSTEEL PLANK: An efficient factory made unit of fire resistive and insulating GYPSTEEL Gypsum for floors and roofs.

Literature

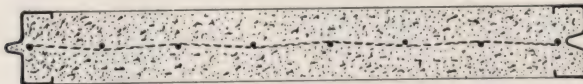
Complete literature on Gypsteel Plank and all other Gypsteel products will be sent promptly on request.

GYPSTEEL PLANK*

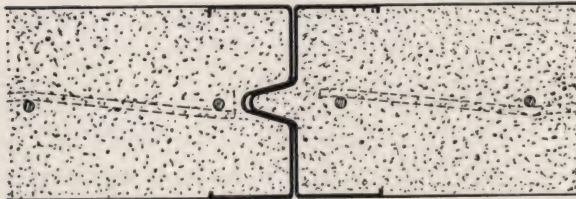
Gypsteel Plank is manufactured in two types and three sizes, to meet varying conditions of service, each retaining the same fundamental principle of design; namely, similarity to wood lumber in form, use, convenience, and adaptability, with the certain strength that is assured only by steel reinforcing. Each is a solid slab of factory cast, extra dense gypsum (manufactured under the patented Gypsteel Process), made

in a standard, convenient-to-handle size, adaptable to varying job conditions, with a minimum of cutting and waste.

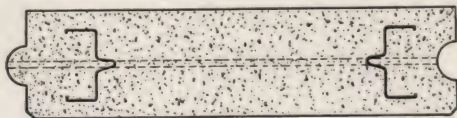
In one type Plank is reinforced with a binding of copper-bearing, galvanized steel, tongued and grooved like lumber, that meshes to form a steel I-beam. The other is reinforced with steel channels cast within the Plank. It is also tongued and grooved, but of gypsum, and the units are locked together by means of ingenious steel dowels.



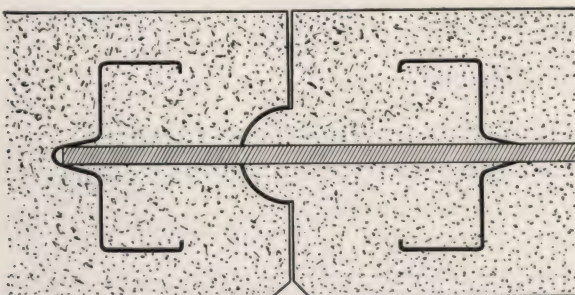
Cross Section Through Senior and Junior Plank
Weight 12 lbs. per sq. ft.



Half-size Section of Tongue and Groove Joint of Senior and Junior Plank
Showing how they mesh to form a continuous steel I-beam, 2-in. deep.
Note: The ends as well as the sides are tongued and grooved



Cross Section Through Dowelled Plank
Weight 16 lbs. per sq. ft.



Half-size Section of Tongue and Groove Joint of Dowelled Plank
Note how the dowel is driven into the recess in the steel reinforcing channel

Senior Plank

2-in. Thick 15-in. Wide 10-ft. 0-in. Long

For roofs on spans up to 7 ft. 0 in. and for floors on spans up to 5 ft. 0 in.

The tongued and grooved steel binding, which encloses the ends as well as the sides, is a single piece frame, locked and reinforced at the corners. The gypsum core is additionally reinforced with mesh.

Junior Plank

2-in. Thick 15-in. Wide 6-ft. 0-in. Long

For roofs on spans up to 4 ft. 0 in. and for floors on spans up to 3 ft. 0 in.

Junior Plank is also enclosed with a single piece tongued and grooved frame, binding the ends as well as the sides, exactly like the Senior Plank except that it is of lighter gauge. It is also reinforced with mesh.

Dowelled Plank

3-in. Thick 12-in. Wide 10-ft. 0-in. Long

For roofs on spans up to 7 ft. 0 in.

Reinforced longitudinally with two steel channels embedded in the slabs. Sides and ends are tongued and grooved gypsum. Running crosswise, and cast within the body of the Plank are five steel dowels.

*The term Plank, as applied to cementitious building products, is a registered trade mark of the American Cyanamid and Chemical Corporation.

LOAD TABLE FOR GYPSTEEL PLANK
(Total safe super-imposed load in pounds per square foot)

Senior Plank				Junior Plank			Dowelled Plank	
4' 0"	5' 0"	Roofs only		2' 0"	3' 0"	Roofs only 4' 0"	Roofs only	
		6' 0"	7' 0"				Type A 5' 0"	Type B 7' 0"
150	150	75	75	150	120	75	75	75

APPLYING GYPSTEEL PLANK

Plank is laid directly over wood or steel members of any type and either uniform or variable spacing up to 7 ft. 0 in. on roofs, and up to 5 ft. 0 in. on floors. It may be nailed direct to wood supports, or attached to a steel frame by means of simple clips.

Plank is erected *without regard to joist or purlin spacing* by staggering end joints. *Joints need not come over the supports.* There are no joints to grout, forms to erect, nor delays from freezing weather.

The strength of a Gypsteel Junior or Senior Plank floor or roof is in the meshed steel binding. This binding forms a 2-in. steel I-beam, stiffened by the gypsum core. In Dowelled Plank each unit is reinforced with two steel channels, 2-in. in depth, running its full length. The units are "locked" together by steel dowels cast within each Plank that are driven through and into the next unit as each is erected. Observe in the detailed section on the preceding page how the dowels, driven into the adjacent Plank, enter the recess formed in the steel channels.

Thus, in each type of Plank, the principle employed serves to lock all units together and to evenly distribute loads that may be concentrated on one or more units.

For floors or flat roofs, where a metal lath and plaster ceiling is to be installed below, usually the most economical method is to use Junior Plank in combina-

tion with light steel joists. Practically any type of standard finish flooring may be applied over Plank. Ordinary double floors are laid by simply nailing the rough flooring direct to the Gypsteel Plank (satisfactory and economical results are obtained using 1x4s, spaced about 12-in. on centers), and then laying the finished flooring in the usual manner. Linoleum, mastic tile and similar flooring may be laid over a 1/4-in. minimum coat of Plankote* troweled over the Plank surface by the flooring contractor. Plankote, manufactured by this corporation, bonds perfectly with Gypsteel, sets quickly and firmly, and is easily troweled to a smooth hard finish.

For roofs, where the ceiling side is exposed, economy recommends the use of either Senior or Dowelled Plank with the purlins spaced as far apart as is consistent with the load requirements. Any type of standard roofing is easily applied. For built-up roofings, follow the usual specifications for application over wood decks, nailing the first layer of paper or felt, and spot mopping, if desired, but not mopping the entire area. Shingle, slate, and other roofings of this type may be nailed direct to Plank using *square cut nails* penetrating 1 1/2-in.



Cut-up Roofs, Steep Pitches—Bring Out the Advantages of Gypsteel Plank



Plank is Laid Just Like Lumber, but with the End Joints at Random Regardless of Location of Supports

Advantages

1. Plank may be nailed, sawed, cut or bored as readily as wood.
2. No waste because of laps or cutting; the shortest piece may be used.
3. Easy to handle and erect; requires only carpenter's tools.
4. Will not rot, shrink, or warp; vermin and termite proof.
5. Absolutely incombustible.
6. Unusually high insulating properties.
7. Eliminates form work and water in construction; there is no waiting for material to "set."

Send for complete catalog and price list.

*Trade Mark

GYPSTEEL PRE-CAST CEILING SLABS

Gypsteel Precast Ceiling Slabs are designed to furnish a flat ceiling of class "A" fireproof construction in steel frame buildings of any type.

Used in combination with Senior or Junior Plank, they are suspended beneath the supporting steel, completely fireproofing these members with 2 in. of solid gypsum, and making possible a light weight, flat ceiling floor system with the highest fireproof rating.

Suspended beneath the bottom chords of roof trusses, Gypsteel Pre-cast Ceilings not only fireproof the steel, but effect substantial savings in fuel through their own high insulating value and by isolating the normally unused space above the bottom chord.

Gypsteel Ceilings are approved for first-class construction by the building of departments of principal cities.



Gypsteel Ceilings Afford Full Protection to Floors and Roof Beams and Provide an Excellent Plaster Base

GYPSTEEL COMPOSITE PRE-CAST FLOOR ARCH

Gypsteel Composite Pre-cast Floor Arch is a thoroughly practical and economical fireproof floor construction, free from form work and water, suitable for general building construction for spans between supporting members up to 8 ft. 0 in. It is adaptable to all classes of fireproof steel frame buildings, being fully approved by



With the Beam and Girder Fireproofing Installed the Gypsteel Composite Floor Is Ready for Plaster

the building departments of principal cities for buildings of the first class and for live loads of 150 lbs. per sq. ft.

Because it is light in weight the composite Floor Arch permits substantial savings in the tonnage of steel required for beams, girders, and columns over the typical short span concrete arch construction.

GYPSTEEL SHORT SPAN PRE-CAST ROOF



Installing a Gypsteel Short Span Pre-cast Roof

Consists of slabs 30-in. in length supported by sub-purlins spanning the distance between the main purlins. For the greatest economy, they should be installed upon Gypsteel Sub-purlins, especially developed for this purpose. They may also be supported by tees, angles, light rails, junior beams, or metal joists. Slabs are available in various thicknesses from 2½ in. to 4 in., both solid and hollow.

Especially adaptable for curved surfaces, very irregular roofs, or those with numerous hips, valleys, or dormers, and also very steep pitched roofs.

MISCELLANEOUS PRODUCTS

A complete line of pre-cast gypsum units for beam, girder and column fireproofing, as well as all standard sizes of gypsum partition tile, are available under

the Gypsteel trademark. The corporation also markets a complete line of gypsum plasters of the highest quality.

THE RED BOOK



1936 EDITION

UNITED STATES GYPSUM COMPANY

UNITED STATES GYPSUM COMPANY

Engineering Sales Division

• • •

GENERAL OFFICES

300 West Adams St., CHICAGO, ILL.

SALES OFFICES

Atlanta, Ga.....1440 Citizens and Southern Bank Building
Boston, Mass.....(At Mill) Mystic Wharf, Charlestown, Mass.
Buffalo, N. Y.....514 Brisbane Building
Cincinnati, Ohio.....503 Builders' Building
Cleveland, Ohio.....817 Hanna Building
Dallas, Texas.....1302 Santa Fe Building
Denver, Colo.....Continental Oil Building
Detroit, Mich.....(At Mill) River Rouge, Mich.
Indianapolis, Ind.....534 Architects' and Builders' Bldg.
Kansas City, Mo.....505-6-7 Fairfax Building

Los Angeles, Calif.....507 Architects Bldg., 5th St. at Figueroa
Milwaukee, Wis.....(At Mill) 439 W. Oregon St.
Minneapolis, Minn.....2510 Foshay Tower
New York City, N. Y.....30 Rockefeller Plaza
Omaha, Neb.....Woodmen of the World Building
Philadelphia, Pa.....(At Mill) 58th and Schuylkill River
Pittsburgh, Pa.....1205 Law and Finance Building
St. Louis, Mo.....808 Louderman Building
San Francisco, Calif.....2501 Harrison St.
Washington, D. C.....Investment Bldg., 15th and K St., N. W.

WHY FIREPROOF CONSTRUCTION—Because the long term cost is less.

Because, though steel is incombustible, it has little strength at high temperatures and will fail if not protected.

Because insurance cost is less.

WHY GYPSUM—Because gypsum is the best structural fireproofing material in general use (see General Technical Data on opposite page for proof of this statement).

WHY UNITED STATES GYPSUM COMPANY—Because the United States Gypsum Company has for a third of a century pioneered in the development of the many structural applications of gypsum, both

poured in place and precast, and maintained the leadership in this field.

Because the company has the most complete line and is therefore in position to recommend and sell the best type of construction for the particular job.

Because the company has twenty-eight plants serving the Engineering Sales Division located to speed delivery and reduce transportation costs.

Because the company maintains a staff of research and construction engineers specially schooled in the economics of structural design. Their services are available to architects without obligation of any sort.

Because the company maintains a complete erection organization. The employment of this service fixes the responsibility for both material and workmanship on the manufacturer who is most interested in satisfactory results.

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PRODUCTS DESCRIBED IN OTHER SECTIONS

- | | |
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| (1) Plaster Bases, Plastering Systems, Plasters, Wallboards | (3) Thermal Insulation Products and Sound Control Service |
| (2) Built-up Roofing, Asphalt Shingles and Roll Roofing | (4) Expanded Metal Reinforcement, Partitions, Etc. |
| | (5) Paints |

Gypsum Constructions

ROOFS and FLOORS FIREPROOFING SPECIALTIES

WHY GYPSUM • GENERAL TECHNICAL DATA

FIREPROOF—Gypsum Tile alone have successfully passed the Underwriters' requirements for Fireproof Partitions.

FIRE PROTECTION—Steel loses strength rapidly at temperatures above 1000° F. and, unless properly protected, will fail at the temperatures of 1700° to 2300° F. frequently reached in a building fire.

The ideal fire protection material must:

- (1) Be incombustible
- (2) Protect the steel against high temperature
- (3) Not expand sufficiently to spall off and expose the steel

AND ABOVE ALL MUST:

- (4) Maintain these qualities for the duration of the fire.

GYPSUM COMPLIES WITH THE FOREGOING ESSENTIALS OF THE IDEAL FIREPROOFING MATERIAL BETTER THAN ANY OTHER COMMONLY USED MATERIAL.

PROOF—(1) Tests show that Gypsum will not support combustion at any known temperature.

(2) Tests show that it is impossible for gypsum-protected steel to reach higher temperatures than 212° F. until the gypsum has completely calcined; just as impossible as it would be to feel the heat of a blow torch through a piece of ice until after the ice had melted.

(3) Tests show that gypsum, possessing no strength after it has passed 212° in temperature, can only expand through 142° (room temperature to 212°) even when exposed to higher temperatures.

In a 10 ft. length of column fireproofing the total expansion

for gypsum is	.156 inches
for clay tile is	.59 inches
for concrete is	1.18 inches

(4) Maintaining these qualities when gypsum is used is simply a matter of thickness of the gypsum protection.

The Bureau of Standards' report (Technological Paper No. 130) says: "This table shows that the length of time required for a temperature of 600° C. (1112° F.) to be attained at a depth of 1½ in. does not vary greatly in the clay and concrete specimens. The gypsums are seen to be distinctly better than clay and concrete in this respect, only one of them (out of 28 total specimens) reaching a temperature of 600° C. at a depth of 1½ in. in the three and one-half hour test. Obviously, the gypsum specimens indicate distinctly superior thermal protection for embedded steel." During a test on 3-in. hollow partition tile at the Underwriters' Laboratories, a two-hour exposure to 1900° F. failed to raise the temperature of the unexposed side of the wall over 90° above room temperature.

OTHER DESIRABLE QUALITIES—In addition to these purely fire protection qualities, fireproofing materials must possess other desirable qualities such as:

- (1) Light weight—to save steel
- (2) Easy to cut and fit—to meet the wide variety of conditions which construction imposes
- (3) Good plaster base—as fireproofing is usually plastered.

GYPSUM COMPLIES WITH THESE DESIRABLE QUALITIES AS NO OTHER MATERIAL DOES.

LIGHT WEIGHT—The weight of gypsum constructions is very materially less than that of other commonly used materials. For example:

3 in. Hollow Pyrobar* Partition Tile weighs	10 lbs.
per square foot while	
3 in. Hollow clay partition tile weighs	15 lbs.
per square foot	
3 in. Solid Pyrobar Roof Tile weighs	17 lbs.
per square foot while	
3 in. Solid concrete weighs	38 lbs.
per square foot.	

In a typical structural steel frame building the substitution of gypsum fire protection for clay tile fire protection will show an average of 20 lbs. reduction

*Registered Trade-Mark

in the dead load per square foot of floor throughout the structure. If, in addition, gypsum floor construction is substituted for concrete or clay tile arch construction, an additional saving of approximately 30 lbs. per square foot of floor in dead load can be obtained, making a total saving of 50 lbs. per square foot.

ADAPTABLE—The many types of gypsum poured-in place and precast tile constructions for roofs and floors and the many special shapes and sizes of partition tile, shoe tile, angle tile, soffit tile, curb tile, gutter tile provide a type, size, and shape for all conditions.

Where cutting and fitting is necessary, Pyrobar Gypsum Tile may be cut almost as readily as wood.

PLASTER BASE—Gypsum bonds with gypsum. Therefore, gypsum is the ideal base for gypsum plaster which is universally used.

THERMAL INSULATION VALUE—Low heat conductivity is a fundamental characteristic of gypsum. The table in the opposite column contrasts the B.t.u. loss per hour, per square foot, per degree difference in temperature of several commonly used roof deck materials with the low loss through the equally common types of poured and precast gypsum constructions.

Corrugated sheet iron.....	1.50
3 in. stone concrete	.61
2½ in. Sheetrock Pyrofill Deck.....	.35
3 in. Sheetrock Pyrofill Deck.....	.32
2½ in. Weatherwood Pyrofill Deck (½ in. Weatherwood).....	.25
3 in. Weatherwood Pyrofill Deck (1 in. Weatherwood).....	.18
3 in. Solid Short Span Pyrobar.....	.41
4 in. Hollow Short Span Pyrobar.....	.35
5¼ in. Long Span Hollow Pyrobar.....	.29

SUMMARY OF GYPSUM ADVANTAGES—

- (1) Absolutely incombustible
- (2) Holds steel temperature to 212° F.
- (3) Does not expand sufficiently to spall
- (4) Maintains these qualities for hours
- (5) Very light weight
- (6) Easily cut and fitted
- (7) Good plaster base
- (8) Precast units machine moulded
- (9) Poured constructions set in 15 to 20 minutes
- (10) Easily and cheaply erected
- (11) Special shapes to fit all conditions
- (12) Meets all the essentials of the ideal fireproofing material whether poured or precast in units.

SHEETROCK* • PYROFILL* WEATHERWOOD* • PYROFILL* ROOF CONSTRUCTIONS

• • • DESCRIPTION

SHEETROCK-PYROFILL ROOF CONSTRUCTION—Consists of Sheetrock undersurface in lengths equal to the main purlin spacing supported on the flanges of light rail sub-purlins, spaced 32½ inches on centers and clipped to the main purlins.

Over which is poured a slab of gypsum fibre concrete (Pyrofill) reinforced with an electrically welded galvanized steel fabric.

SHEETROCK UNDERSURFACE—Consists of ¾ in. Sheetrock, 32 in. wide, and in lengths equal to the main spacing so all joints occur over the main purlins.

WEATHERWOOD-PYROFILL ROOF CONSTRUCTION—Consists of Weatherwood Insulating Board undersurface (either ½ or 1 in. thick) in lengths equal to the main purlin spacing supported on the flange of light rail sub-purlins. Spaced 32½ in. on centers and clipped to the main purlins.

Over which is poured a slab of gypsum fibre concrete (Pyrofill) reinforced with an electrically welded galvanized steel fabric.

WEATHERWOOD UNDERSURFACE—Consists of either ½ or 1 in. thick Weatherwood Insulating Board, 32 in. wide, and in lengths equal to the main purlin spacing so all joints occur over the main purlins.

SUB-PURLINS—Light rails (or tees) laid at right angles to the main purlins, spaced approximately 32½ in. on centers and clipped to the main purlins.

REINFORCEMENT—Consists of a continuous electrically welded galvanized steel fabric (specially made to USG specifications) with No. 12 longitudinal wires 4 in. on centers and No. 14 transverse wire 8 in. on centers.

PYROFILL (GYPSUM FIBER CONCRETE)—Consists of gypsum stucco, water, and not to exceed 12½ lbs. of fiber to 87½ lbs. of calcined gypsum. It weighs only 55 lbs. per cubic foot.

CURBS, END WALLS, ETC.—Curbs, end and similar walls may be constructed of Precast Gypsum Tile. Curbs may also be constructed of Sheetrock-Pyrofill or Weatherwood-Pyrofill construction.

*Registered Trade-Mark

OUTSTANDING ADVANTAGES SHEETROCK • PYROFILL and WEATHERWOOD • PYROFILL ROOF CONSTRUCTIONS

ADAPTABILITY—Whenever steel framing is used (whether the roof be flat, 45° pitched, monitor, saw-tooth, Pond, Aiken, etc.), the inherent value of either Sheetrock-Pyrofill or Weatherwood-Pyrofill construction may be advantageously employed.

FIREPROOF—The inherent advantages of gypsum for fireproofing are universally recognized.

LIGHT WEIGHT—The Standard 2½ in. slab weighs only 12 lbs. as against 37 lbs. for 3 in. stone concrete. This saving is reflected throughout the structure, including columns and footings.

APPEARANCE—The flat undersurface with uniform paneled effect is singularly pleasing to the eye.

NOTE—*If the underside of the slab is to be painted or otherwise decorated, such work should not be done until the waterproof roof covering has been applied and the slab is thoroughly dry.*

ECONOMICAL—The simplicity of the construction plus the light weight and the speed with which it is installed makes either Sheetrock-Pyrofill or Weatherwood-Pyrofill Roof Construction extremely economical.

NO MAINTENANCE—Calcined gypsum is chemically inert. Examinations of steel rods embedded for fifteen years in gypsum have shown no evidence of progres-

sive corrosion. The maintenance cost is practically nothing.

HIGH INSULATION—Gypsum has the highest insulating value of any fireproof structural building material. It is effective in protecting the building from extremes of outside temperature, both in summer and in winter.

The following table gives the heat loss through various types of roof construction expressed in B.t.u.'s per hour, per sq. ft., per degree difference in temperature. All values are figured with a 5-ply roof covering:

2½ in. Sheetrock-Pyrofill	.35 B.t.u.'s
3 in. Sheetrock-Pyrofill	.32 B.t.u.'s
2½ in. Weatherwood-Pyrofill (½ in. board)	.25 B.t.u.'s
3 in. Weatherwood-Pyrofill (1 in. board)	.18 B.t.u.'s

SPECIAL ADVANTAGE OF WEATHERWOOD-PYROFILL ROOF CONSTRUCTION—Weatherwood-Pyrofill Roof Construction has the special, additional, and unique advantage of providing a high degree of acoustical absorption. This is particularly important in auditoriums, gymnasiums, and similar buildings but is also of considerable importance in many types of factories and industrial buildings.

The approximate acoustical absorption provided is given in the following table:

½ in. Weatherwood.....	30%
1 in. Weatherwood.....	45%

OTHER POURED • IN • PLACE GYPSUM CONSTRUCTIONS

USG TEE SYSTEM* PYROFILL ROOF CONSTRUCTION—This construction which was formerly called "The Mark's 'T' System" is quite similar to Sheetrock-Pyrofill and Weatherwood-Pyrofill constructions. The principal difference is that standard 32 x 36 in. plaster board or Weatherwood is used with 1 x 1 x ½ in. tee irons laid across the main tees to support the ends of the board. The construction details are identical.

USG IMBEDDED RAIL CONSTRUCTION—This construction is also similar to Sheetrock-Pyrofill construction in that the sub-purlins and mat reinforcing are the same. The big difference is that removable wood forms are used, hung three-quarters of an inch below the bottom flange of the sub-purlins. This provides a uniform gypsum undersurface unbroken by exposed sub-

purlins. This construction also permits the fireproofing of the main purlins with Pyrofill at low cost.

PYROFILL MONOLITHIC CONSTRUCTION—This is the oldest type of gypsum roof and floor construction in general use and for some buildings it is still the best. In this construction, twisted wire cables are stretched over the main purlins and then deflected in the center of each span and Pyrofill (gypsum fiber concrete) is poured on removable wood forms to desired thickness. In this construction the cables (figured by suspension formula) take the entire load and the gypsum acts merely as a filler.

On a large, flat roof when no exposed steel is allowed, this construction will be found very economical and satisfactory.



Sheetrock-Pyrofill Roof Construction—Pouring Pyrofill

*Trade-Mark

Master Specifications

SHEETROCK • PYROFILL and WEATHERWOOD • PYROFILL ROOF CONSTRUCTIONS

NOTE—Notes are explanatory or advisory only and should not be included in the specifications.

(1) WORK INCLUDED

NOTE—Here list the various roof areas to be constructed of Sheetrock-Pyrofill or Weatherwood-Pyrofill and specify the prescribed live load. If live loads vary, designate the live load applying to the various areas.

(2) SUPPORTING STRUCTURAL STEEL WORK

All steel work for the support of the Sheetrock-Pyrofill Roof Construction has been designed not only to carry the prescribed live and dead loads, but to accommodate the most economical installation in accordance with the standard detail of the United States Gypsum Company.

(3) MATERIALS

(3a) GENERAL—All Gypsum products shall be as manufactured by the United States Gypsum Company, 300 West Adams Street, Chicago, Ill.

(3b) SUBPURLINS—Subpurlins shall be steel [tees] [rails] of sizes and spacings required or indicated on the structural plans, furnished with a shop coat of paint. Provide all necessary clips [of types best suited to conditions] for rigidly securing subpurlins to main purlins, etc.

(3c) SHEETROCK FORMS—Sheetrock ($\frac{3}{8}$ in. thick x 32 in. wide) shall be mill-made to exact lengths (maximum 10 ft.) to match the main purlin centering.

(3d) WEATHERWOOD FORMS—Weatherwood [$\frac{1}{2}$ in.] [1 in.] thick x 32 in. wide shall be mill-made to exact lengths (maximum 10 ft.) to match the main purlin centering.

(3e) REINFORCEMENT—Steel reinforcement shall be galvanized electrically-welded steel fabric made to USG specifications consisting of No. 12 main longitudinal wires 4 in. on centers and No. 14 transverse wires 8 in. on centers having an effective sectional area of .026 sq. in. per foot width of slab.

(3f) PYROFILL—Pyrofill shall consist of calcined gypsum and not to exceed 12½ lb. of clean soft wood fiber to every 87½ lb. of

gypsum. The gypsum and wood fiber shall be mill mixed. Water for proper consistency shall be added at the job.

(3g) PRECAST CURB TILE—Where so indicated on plans and details furnish 3-in. thick precast gypsum curb tile (reinforced when carrying a roof load or retaining drainage fill). For end wall construction where so indicated furnish Pyrobar Curb Tile (3-in. x 15-in. x 30-in. non-reinforced).

(3h) GYPSUM MORTAR—Gypsum mortar shall consist of one part of unfibred gypsum cement plaster and not to exceed two parts of clean sharp sand.

(4) ERECTION

(4a) GENERAL—All [Sheetrock-Pyrofill] [Weatherwood-Pyrofill] Roof Construction including all subpurlins [curbs] [end walls] [saddles] [drainage fill] etc., shall be completely erected by the Engineering Sales Division of the United States Gypsum Company.

Roof construction shall be of thickness required on plans and details.

All joints in subpurlins shall be staggered or rigidly tied together. Reinforcement shall be continuous. All roof surfaces shall be screeded smooth and true ready to receive the finished waterproof roof covering.

(4b) POURED CURBS—All curbs so indicated on plans and details shall be constructed of Sheetrock-Pyrofill.

(4c) TILE CURBS—All curbs so indicated on plans and details shall be constructed of precast gypsum curb tile (reinforced when carrying roof load or retaining drainage fill) set in gypsum mortar.

(4d) END WALLS, ETC.—Construct all [end walls] of [monitors] [sawtooth skylights] ["A" frames] [specify] of Pyrobar Curb Tile set in gypsum mortar.

(4e) DRAINAGE FILL—Provide Pyrofill saddles and drainage pitches to direct roof drainage to [gutters] [drainage outlets].

(5) WATERPROOF ROOF COVERING

NOTE—Provide in the Roofing and Sheet Metal division of the specifications that the waterproof roof covering shall be applied as soon as possible after the Sheetrock-Pyrofill slab is erected (preferably within twenty days). See USG Built-up Roofing Section.

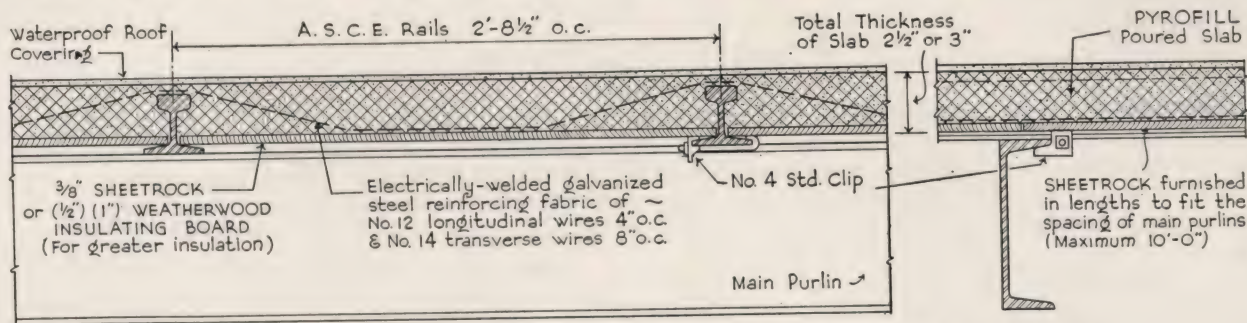
RAIL SIZES AND WEIGHTS OF SALES

Rails Spaced 32½ In.—45 Lb. per Sq. Ft. Total Load B.M.— $\frac{1}{10}$ WL; Fiber Stress, 18,000 Lb. Per Sq. In.

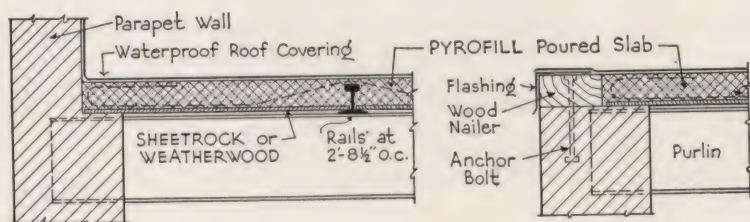
Span of main purlins	Size of rail, lb.	Weight of rail per sq. ft. of roof, lb.	*Minimum thickness of slab, in.	Weight of Slab including rail, lb.
Up to 6'4"	8	1.00	2½	11.50
6'4" to 8'11"	12	1.50	2½	12.00
8'11" to 11'3"	16	2.00	2½	12.50
11'3" to 13'2"	20	2.50	3	15.00

*Includes thickness of Sheetrock or Weatherwood. For other spacing of sub-purlins, or other loads, allowable span will vary inversely as the square root of the spacing or the load. Spans can be increased over those shown by considering the effect of the rail imbedment in the slab. Tests have shown that an 8-lb. rail may be used for spans up to 7 ft.

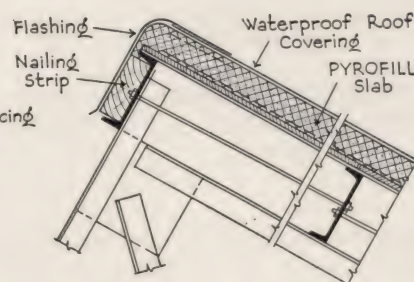
DETAILS OF SHEETROCK-PIROFILL SYSTEM



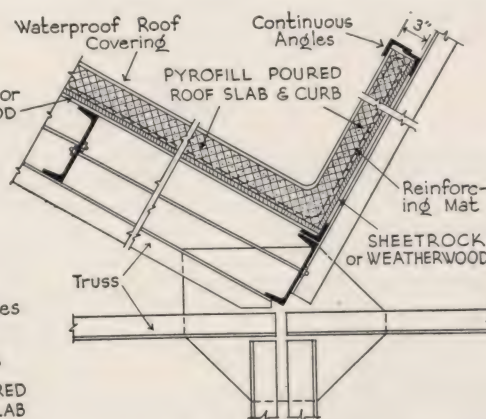
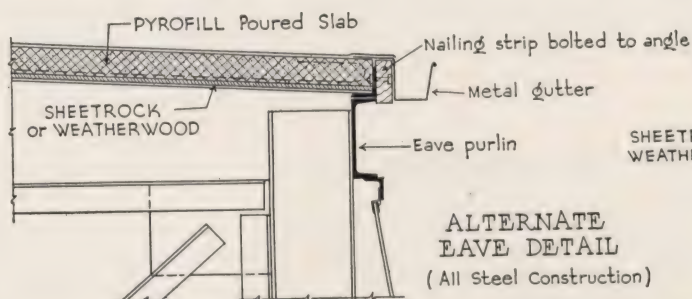
TYPICAL SHEETROCK-PIROFILL ROOF CONSTRUCTION



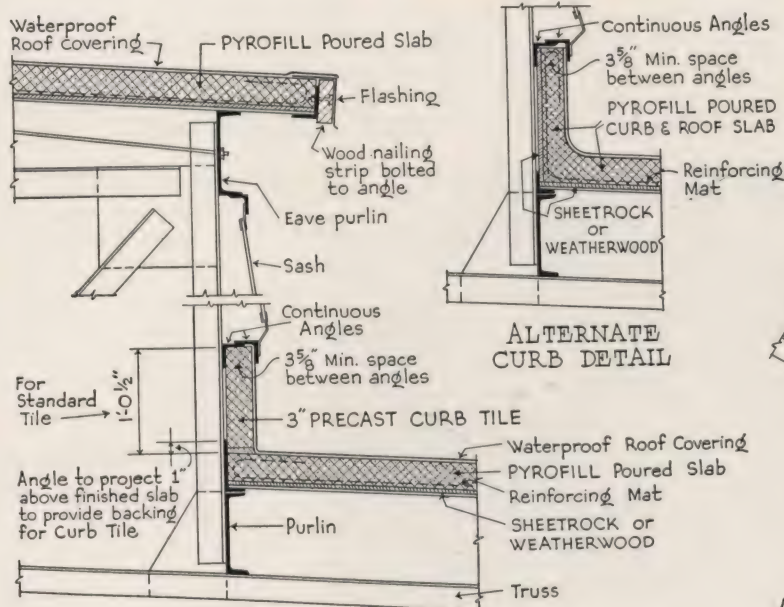
ALTERNATE DETAILS FOR ENDS OF BUILDING



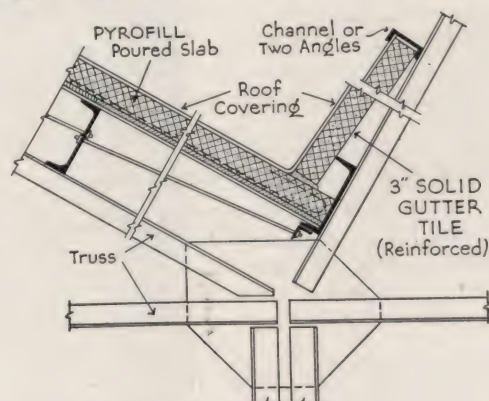
SAWTOOTH PEAK CONST'N.



SAWTOOTH GUTTER CONST'N



CURB & EAVE CONSTRUCTION FOR MONITOR



ALTERNATE SAWTOOTH GUTTER CONSTRUCTION

PYROBAR SHORT SPAN ROOF TILE

DESCRIPTION

PYROBAR SHORT SPAN ROOF TILE—Pyrobar Short Span Roof Tile are cast in steel moulds using a dense mix of specially processed gypsum and are reinforced with electrically welded galvanized steel fabric. They are furnished in three sizes: 3 x 12 x 30 in. solid, 3 x 18 x 36 in. solid, and 4 x 12 x 30 in. hollow, all weighing 17 lbs. per square foot.

The tile are laid directly on steel supports without mortar and with sides tight together with full bearing on the sub-purlins. The grouting grooves are then filled with gypsum mortar and the roof is immediately ready for the application of the roof covering.

SPECIAL UNITED STATES GYPSUM BULB TEE SUB-PURLINS—This section has been developed primarily for use with Short Span Pyrobar Roof Tile as a more economical sub-purlin than standard tees. The wide flange provides ample bearing for the tile, and, being designed particularly for this purpose, it has considerably greater load carrying capacity than a standard tee of equal sectional area. The United States Gypsum Company is prepared to furnish the bulb tees, erected in place in connection with its installation of

Short Span Pyrobar Roof Tile, or in connection with the installation of Pyrobar by others, bulb tees can be furnished fabricated ready for erection.

GUTTER AND CURB TILE • DRAINAGE FILL—

Gutter Tile—Curbs under sawtooth sash, etc. restraining drainage fill or subject to roof loads, are constructed of 3-in. solid reinforced Pyrobar Gutter Tile, 12 in. wide and made in lengths to fit the structural steel work.

Curb Tile—Curbs, above and below monitor and sawtooth sash, end walls, etc., which do not sustain a roof load or restrain drainage fill are constructed of 3-in. solid non-reinforced Pyrobar Curb Tile, 15 x 30 in.

Drainage Fill—The use of Pyrofill for drainage fill is ideal on account of its light weight and the quick setting qualities of gypsum. Where deep fill is required, the Pyrofill is laid over dry cinders tamped in place. The Pyrofill provides a smooth surface for the roof covering and is an excellent material for constructing fillets and leveling off uneven and broken surfaces in connection with difficult roof framing.

OUTSTANDING ADVANTAGES

ADAPTABILITY—Pyrobar Short Span Roof Tile supported on tee sub-purlins is by far the most flexible precast roof construction. It is easily cut and fitted at hips, valleys, dormers, and openings which is very important for many roofs. It can be used with economy on any type of factory or industrial building, power plant, school, etc. The solid tile is a nailing base.

FIREPROOF—Gypsum is absolutely incombustible and the inherent advantages of gypsum for fireproofing are universally recognized. For proof of the fireproof qualities of gypsum, see page 1.

LIGHT WEIGHT—The weight of the tile plus the USG Bulb Tee is only about 18 lbs. per square foot (less than half the weight of 3 inches of stone concrete).

APPEARANCE—The interior appearance is neat and the unplastered surface is an excellent light reflector.

ECONOMICAL—Pyrobar Roof Tile are low in cost and permanent. The large light weight units are easily and speedily erected in any weather in which it is possible to work.

The Pyrobar tile are laid directly on the supporting steel work and require only the grouting of joints to make the roof ready for the waterproof covering. This can follow immediately, materially shortening the construction period and making possible earlier occupancy.

NO MAINTENANCE—Calcined gypsum is chemically inert. Examinations of steel rods embedded for fifteen years in gypsum have shown no evidence of progressive corrosion. The maintenance cost is practically nothing.

HIGH HEAT INSULATION—Gypsum has the highest insulating value of any fireproof structural building material. It is effective in protecting the building from extremes of outside temperature, both in summer and winter.



Bingham Hall, Yale University, New Haven, Conn.
W. B. Chambers, Architect
11,755 sq. ft. Short Span Pyrobar

HEAT TRANSMISSION VALUES—In the following the transmission is expressed in B.t.u.'s per hour, per square foot, per degree difference in temperature. All roof decks are figured with 5-ply roof covering.

3 in. Solid Pyrobar Roof Tile..... .41 B.t.u.'s
4 in. Hollow Pyrobar Roof Tile.... .35 B.t.u.'s

NAILING BASE—The 3 in. solid is recommended particularly for nailing purposes because it assures maximum penetration and thus the greatest nail-holding ability.

Application of ordinary slate or ornamental tile to roofs up to 60° slope should be made with nails having not less than 2 in. penetration. When the slope of the roof is greater than 60° or extra heavy slate or tile is to be used, refer the problem to the Company's

Engineers for special study and recommendations.

The roof deck should be thoroughly dry or as nearly so as can be reasonably obtained. Square cut cement coated Naval bronze nails have proven their superiority after a large number of tests on all types.

Application of sheet metal (tin or copper) requires thoroughly rigid fastening, due to the strain put upon the cleat nails by the expansion and contraction of the sheets. There should be sufficient cleats to securely anchor the sheets to the roof construction. Standard practice indicates that the spacing of cleats should be approximately 8 in. on centers, each secured with two nails having not less than 2 in. penetration.

It is standard practice to use a sheet of roofing felt between the gypsum roof deck and the ornamental covering, whether of slate, tile, or metal.

Master Specifications

PYROBAR SHORT SPAN ROOF TILE

(1) WORK INCLUDED

NOTE—Here list the various roof areas to be constructed of Pyrobar Precast Roof Tile and specify the prescribed live load. If more than one type of tile is used, list separately the areas constructed of each.

(2) MATERIALS

(2a) SHORT SPAN TILE—Where so designated, the roof slab shall be constructed of Pyrobar Short Span Roof Tile [3 x 12 x 30 in. Solid] [3 x 18 x 36 in. Solid] [4 x 12 x 30 in. Hollow] accurately laid, without mortar, upon the supporting steel with full bearing and with tile units laid tight. All joints on top surface shall be filled with gypsum mortar and the roof left smooth and true, ready for the application of the waterproof roof covering.

(2b) SPECIAL UNITED STATES GYPSUM BULB TEE SUB-PURLINS—All sub-purlins shall be special United States Gypsum Bulb Tees.

(2c) CURB TILE, END WALLS, ETC.—Where so indicated on the plans, curbs and end walls shall be constructed with 3 in. Solid Pyrobar Curb Tile set in gypsum mortar.

(2d) GYPSUM MORTAR—Gypsum mortar shall consist of one part of unfibered gypsum cement plaster and not to exceed two parts

of clean, sharp sand. Mix to the proper consistency in a clean mortar box with clean water.

(2e) SADDLES AND DRAINAGE FILL—Saddles and Drainage Fill shall be constructed of Pyrofill (Gypsum Fiber Concrete) consisting of calcined gypsum and not to exceed 12½ lbs. of clean soft wood fiber to 87½ lbs. of gypsum and sufficient clean water for proper consistency.

(3) ERECTION

(3a) BY UNITED STATES GYPSUM COMPANY—All Pyrobar Precast Roof Tile Construction shall be completely erected by the Engineering Sales Division of the United States Gypsum Company or one of its authorized erectors.

(4) WATERPROOF ROOF COVERING

NOTE—Provide in the Roofing and Sheet Metal division of the specifications that the waterproof roof covering shall be applied as soon as possible after the gypsum roof slab is erected (preferably within twenty days).

NOTE—For application of ornamental roofing, such as slate, tile, and metal, see recommendations given above under "Nailing Base".

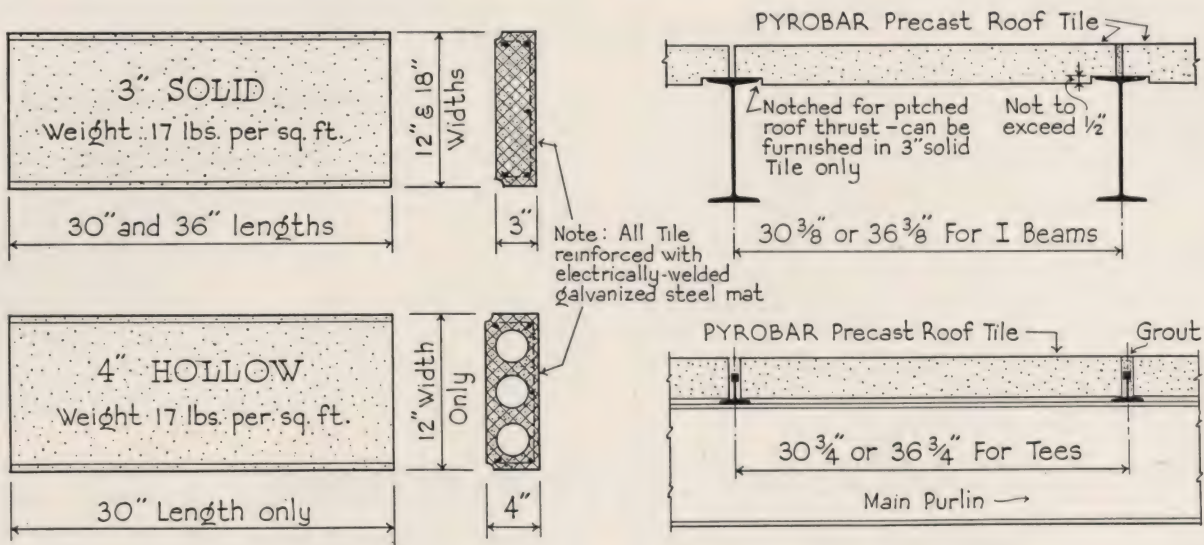
SUBPURLIN SIZES FOR PURLIN SPANS UP TO 8 FT. 5 IN.
Used with Short Span Tile, Solid and Hollow—18,000-lb. Stress
Spaced 30¾ In. on Centers—50 Lb. per Sq. Ft. Total Load—BM=½ WL

Span	6' 1"	6' 11"	7' 9"	8' 5"
Size of tee	2¼ x 2¼—4.1 lb.	2¼ x 2¼—4.9 lb.	2½ x 2½—5.5 lb.	2½ x 2½—6.4 lb.

USG Bulb Tee—3.1 Lb—1.25 lb. Steel per sq. ft. of roof—Span to 7'-4" (6'-9" for 36¾" O.C.)

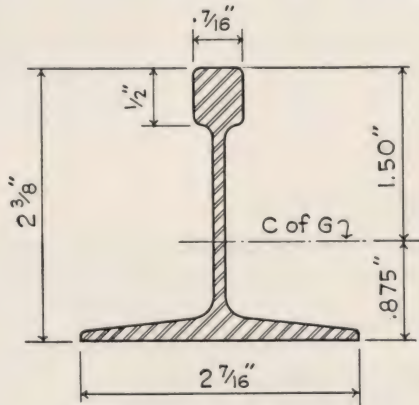
For other spacing of sub-purlins, or other loads, allowable span will vary inversely as the square root of the spacing or the load.

DETAILS OF PYROBAR SHORT SPAN ROOF TILE



U. S. G. BULB TEE SUB ~ PURLIN

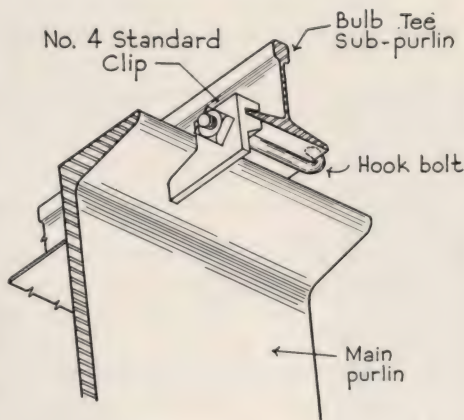
For Short Span Roof Tile



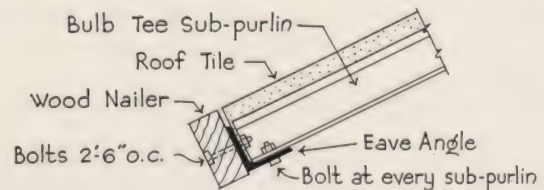
Weight Per Yard	8.10 lbs.
Section Modulus	.440 in. ³
Moment of Inertia	.660

Based on 2'-6 3/4" spacing of Tees
Total Roof Load of 50 lbs. per sq. ft.

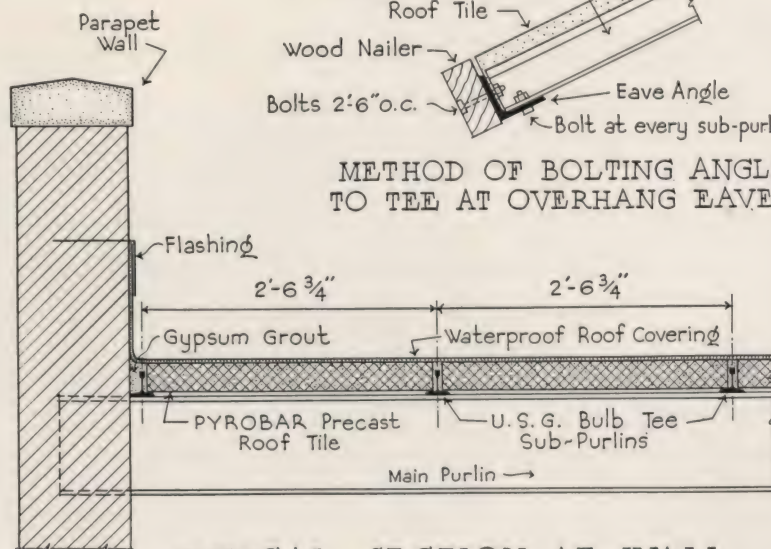
Maximum Span (fs = 16000, M = $\frac{WL}{10}$)	6'-9"
Deflection	.25
Maximum Span (fs = 18000, M = $\frac{WL}{10}$)	7'-2"
Deflection	.31



METHOD OF CLIPPING SUB-PURLINS TO MAIN PURLINS ~ SLOPED ROOF



METHOD OF BOLTING ANGLE TO TEE AT OVERHANG EAVES



TYPICAL SECTION AT WALL

PYROBAR LONG SPAN HOLLOW ROOF TILE

DESCRIPTION

GENERAL—Pyrobar Long Span Hollow Precast Roof Tile are cast in steel moulds using specially processed gypsum and are reinforced with electrically welded galvanized steel fabric. They are made 5¼ in. thick, 18 in. wide, and any length from 4 to 6½ feet to fit the purlin spacing on the job. They are made in either butt end or lap joint end for I-beam or channel purlins respectively, and can be furnished notched if required for roof thrust. The weight of this tile is 23 pounds per square foot.

Curb and Gutter Tile and Drainage Fill are the same as described on page 6.

OUTSTANDING ADVANTAGES—

- (1) **Fireproof**—See page 1.
- (2) **Light Weight**—See pages 1 and 2.
- (3) **Appearance**—The flat, even surface is extremely pleasing in appearance and provides a high light reflection coefficient.

ECONOMICAL—Pyrobar Roof Tile are low in cost and permanent. The large light-weight units are easily and speedily erected in any weather in which it is possible to work. The tile are laid directly on the supporting steel work and require only the grouting of joints to make the roof ready for the waterproof covering. This can follow immediately, materially shortening the construction period and making possible earlier occupancy. Maintenance cost is practically nothing.

HEAT INSULATION—Gypsum has the highest insulating value of any fireproof structural material. It is

equally effective in protecting the building from extremes of outside temperature, both in summer and in winter. Pyrobar Long Span Hollow Roof Tile has the very low transmission of .29 B.t.u.'s. For complete list, see page 2.

ADAPTABILITY—Long Span Hollow Pyrobar Roof Tile are primarily designed to provide a flat uniform ceiling with maximum light reflection and insulation. They are manufactured in lengths 4 ft. to 6 ft. 6 in. to suit the steel framing, and 5¼ in. deep. The tile can be notched to fit over the purlin flanges if desired and can be furnished either with or without lap joint, depending on the bearing afforded. Lap joint tile should be used whenever channel purlins are provided. Long Span Tile are not recommended for roofs with difficult framing requiring considerable cutting nor where a nailing deck is required.

PURLIN REQUIREMENTS—The tile are made to span from purlin to purlin (either steel or wood). No tees or other type of sub-purlins are required. The most economical purlin spacing is approximately 6 feet.

INSTALLATION—The tile are laid directly on the steel sub-purlins or wood framing with sides tight together. The grouting joints on the top surface are then filled with gypsum mortar and the roof is immediately ready for the application of the roof covering.

SPECIFICATIONS—The specifications for Pyrobar Short Span Roof Tile given on page 7 may be used by substituting "Long Span Hollow" for "Short Span."

METAL BOUND GYPSUM FLOOR and ROOF TILE

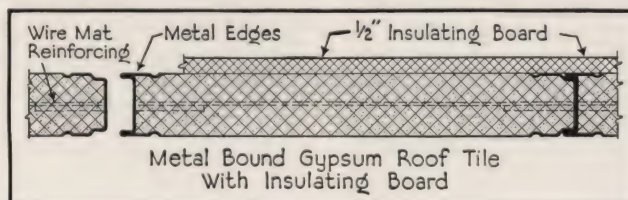
DESCRIPTION

GENERAL—This is a gypsum tile that uses a metal edging to overcome the reduction in strength resulting from its reduction in thickness (as compared with other USG decks). This metal edging is also depended upon to serve as a cantilever for ends of tile projecting beyond supporting joists. Its success depends upon the maintenance of a perfect bond between the metal edging and the gypsum. The units are 2 in. thick, 15 in. wide, and 10 ft. long.

LOADING—75 lbs. total safe load for floors, with a

clear span of 4 ft. between beams, and 50 lbs. total load on roofs, with a 6 ft. spacing of purlins.

ADVANTAGES—The construction is light weight (12 lbs. per square foot). No special sizes are required since the end joints need not fall over supports.



INSULATION—Since the metal edge extends through the tile tending to conduct heat, we recommend that ½ in. insulation board be used over the tile for roof construction.

PYROBAR PRECAST 2½ INCH THICK TONGUE and GROOVE FLOOR and ROOF TILE

• • •

DESCRIPTION

PURPOSE—To provide a precast, light weight, incombustible construction for floors or roofs in connection with Junior Beams, Bar Joists, and other Metal Joists.

GENERAL—2½-in. Tongue and Groove Tile are factory made in units 2½ in. x 10 in. x 6 ft. 0 in. with tongue and groove joints. They are made without any metal edge or any other exposed steel, being reinforced by an electrically welded mat embedded in the gypsum mass where it is protected from corrosion and other damage. This tile weighs 14 lbs. per square foot.

LOADING—For floor construction with supports spaced not over 30 in. O.C., 2½ Inch Tongue and Groove Tile

will safely support a load of 150 lbs. per square foot. For roof construction with supports spaced not over 4 ft. 0 in. O.C., 2½ Inch Tongue and Groove Tile will safely support a load of 50 lbs. per square foot.

ADVANTAGES—Light weight (14 lbs. per square foot), easy and speedy erection, embedded reinforcing, low heat conductivity without additional insulation, standard size (no special sizes), and all the advantages of precast units over poured in place construction from the standpoint of cleanliness and independence from freezing weather conditions.

This is our recommended type of Tongue and Groove Tile construction.

PYROBAR PRECAST CEILING TILE

• • •

DESCRIPTION

PURPOSE—To provide fire protection and a plaster base under any type of steel floor or roof construction.

GENERAL—Precast reinforced gypsum tile, 2 x 18 x 30 in. with fractional sizes as required for starting tile, closures, etc. All four edges have lapped joints. A ⅜-in. galvanized rod is embedded in each tile so that they may readily be attached to a supporting system of hot rolled plasterer's channels. The tile may be at-

tached directly to the steel or suspended from it. Girders may be fireproofed with Pyrobar beam and girder fireproofing.

ADVANTAGES—Especially indicated for the protection of light steel floor systems, they provide full fire protection and an economical plaster base in one material. Space for pipes and conduits is provided without resorting to heavy floor fills.

HYDROCAL* MASTIC FLOOR FINISH

• • •

DESCRIPTION

GENERAL—Hydrocal (Patented), a new specially processed gypsum cement of great strength, is utilized in place of Portland cement in this many purpose mastic floor mixture. Hydrocal is mixed with sand and emulsified asphalt in various proportions, depending upon the nature of the work to be done. For heavy traffic, crushed stone or gravel is added to the aggregate.

The mastic composition is poured like concrete and leveled off and finished in thicknesses from ½ in. to ¾ in. over the base. It may be used over gypsum, concrete, wood, or metal floor constructions.

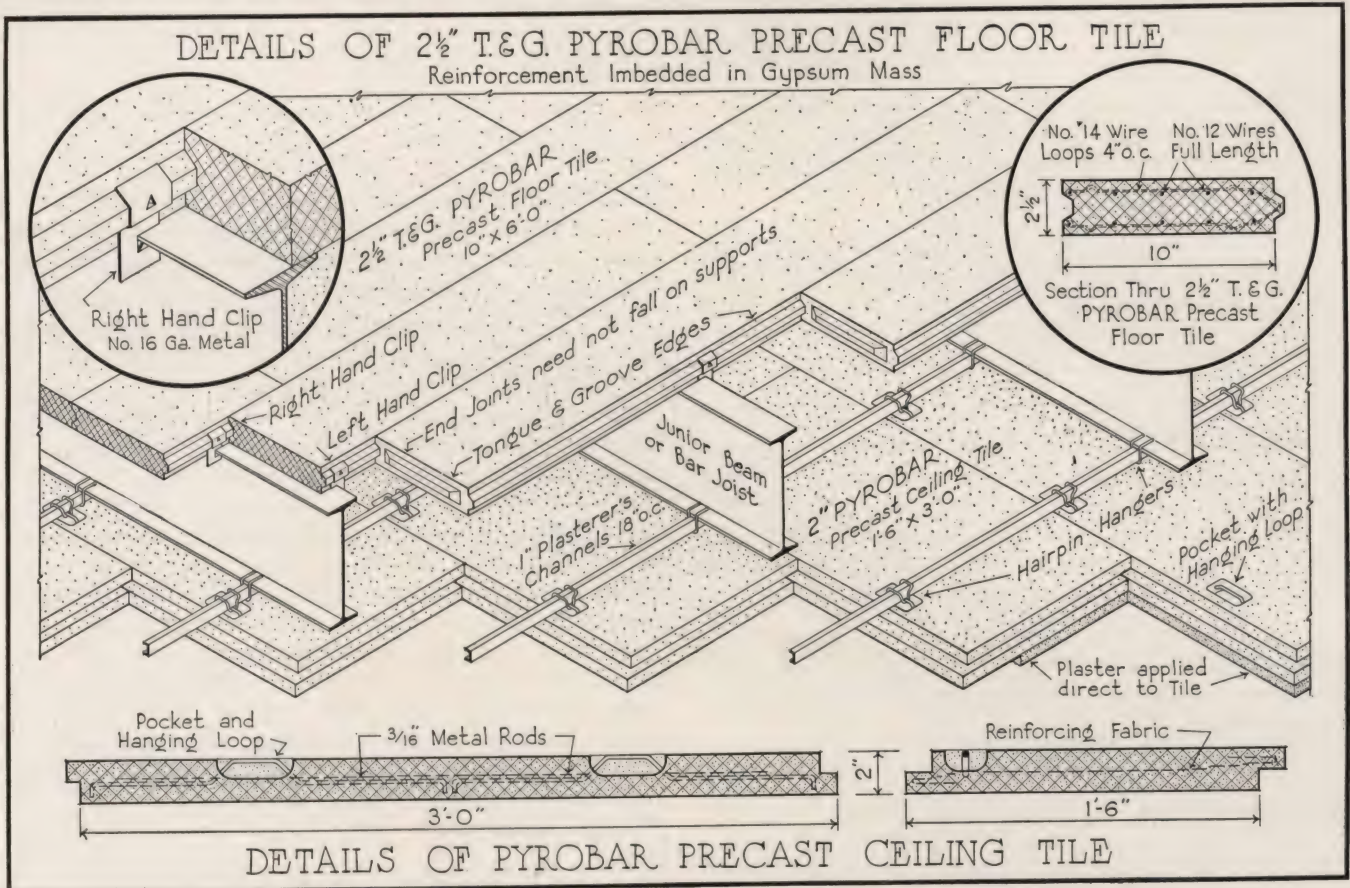
ADVANTAGES—Hydrocal requires less emulsified asphalt than does Portland cement in mixtures of this character, resulting in a lower cost.

It is quick setting and durable, providing a surface resistant to dusting, cracking, and wear, even under factory trucking. It may be used as a low cost leveling mixture for underlayment, under composition, carpets, etc. It is not recommended under extreme acid, oil, or moisture conditions.

The materials may be purchased or the floor finish will be installed complete by the company.

*Registered Trade-Mark

DETAILS of PYROBAR PRECAST 2½ INCH T and G FLOOR and ROOF TILE and PYROBAR PRECAST CEILING TILE



RED TOP* RIB FLOORS

DESCRIPTION

GENERAL—Electrically welded bar trusses (see below), prefired with gypsum at the producing mills are laid directly on the top flanges of the supporting steel, to which they are field welded.

Sheetrock is then laid on the shoulders of the Red Top Ribs and a Sheetrock Pyrofill slab poured in place. The ribs are generally placed 25 in. on center for floors and 33 in. on center for roofs. For floor loads exceeding 150 lbs., the spacing is proportionately reduced.

ADVANTAGES—It will be noted that each rib forms the stem of a Tee Beam in which the Sheetrock Pyrofill is the cross member. The loads are based on the strength of the steel truss members alone so that the Tee construction represents additional strength and stiffness, not considered in the calculations.

It also serves to prevent any lateral sway or tendency of the rib to rotate. The enclosing gypsum makes the slab a rigid whole, effectively tying the entire structure together.

FIREPROOF—This construction is generally acceptable any place where concrete is accepted in building codes and insurance classifications.

It is unnecessary to use concrete for fireproofing as both the supporting steel beams and girders may be fireproofed with Pyrobar beam fireproofing after the

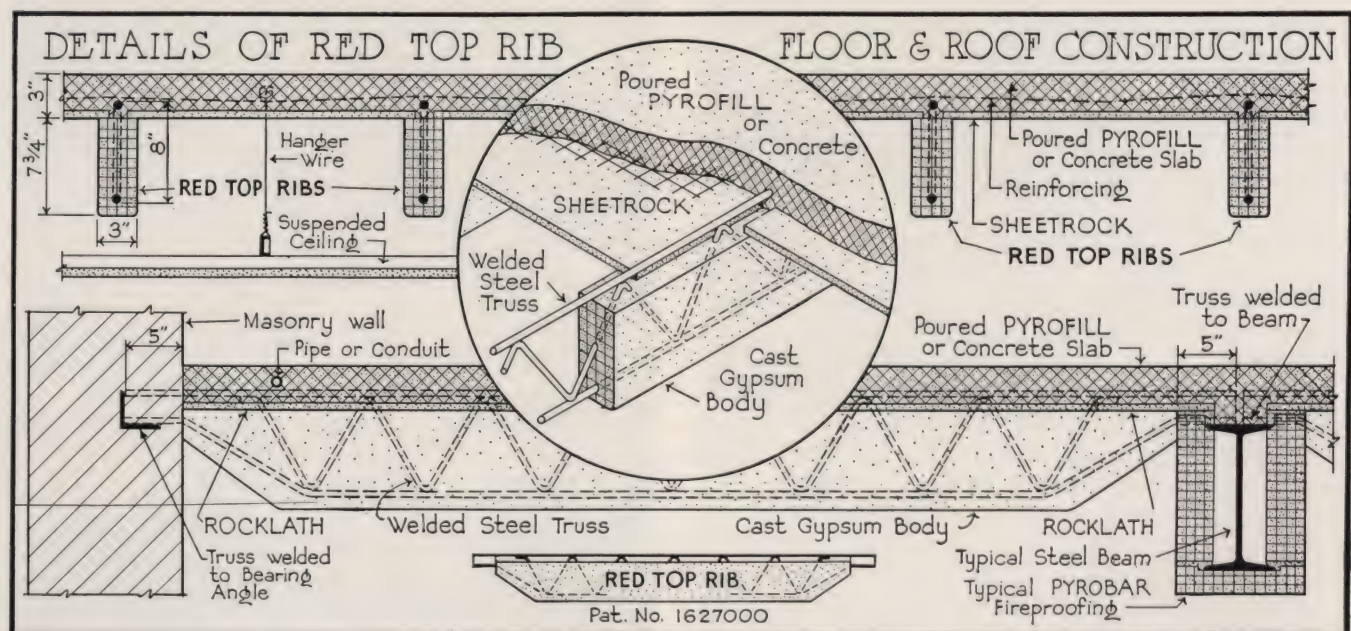
slab is poured, as may the columns, saving additional weight and steel costs.

ECONOMIES—The elimination of all temporary centering, the fireproofing of the ribs, and the construction largely factory built, makes for speedy erection and immediate use of the slabs.

The light weight (less than 20 lbs. per square foot) provides economies in supporting steel from roof to foundation that will generally make this floor construction more economical for any type of fireproof steel building. In tall buildings, useful reductions in footing sizes and costs are possible.

CEILINGS—Where a beam ceiling is desirable, the cast rib and Sheetrock panels are attractive in appearance. Metal lath and plaster ceilings may be attached or suspended in the usual way, in which event the space between the ceiling and the Sheetrock Pyrofill slab may be used for conduits. It is also perfectly possible to embed conduits in the slab itself as they may be readily laid over the ribs and Sheetrock before the Pyrofill is poured, making cinder-fill unnecessary, reducing the total height of the building and making substantial savings in the dead load carried by the supporting steel.

Where this construction has been used, surprising savings in supporting steel and actual slab costs were secured over other structural designs of equal merit in fire protection and strength.



USG STEEL ROOF DECK

DESCRIPTION

GENERAL—

Deck Plates—USG deck plates are rolled from copper-bearing steel. Mill painted in gray. Other materials on special order. USG Deck Plates are 18 in. wide with 1½ in. deep reinforcing ribs, 6 in. on centers. Stiffening beads are formed midway between the ribs. Deck plates are interlocking and end-lapping type, clipped together when erected, forming an integral surface for the application of insulation and roofing materials.

Clips—Two standard types. One for fastening the deck plates to the purlins and the other for locking the plates together between the purlins.

ADAPTABILITY—USG Steel Roof Decks are adaptable for all steel frame structures, fitting any purlin spacing.

ADVANTAGES—

Long Life—The use of copper-bearing steel and insulation assures long life and low maintenance.

Economy—Cost is lowest of any incombustible roof deck.

(1) Structural Steel Savings result from light weight of roof unit.

(2) Fuel Costs are reduced through the use of insulation.

(3) Erection is rapid, due to simplicity of design and method of clipping. Saddles are made from deck plates and are easily placed. These features speed completion of the building and effect economies in construction.

Results—Clean, sanitary and pleasing interior. Year-round comfort for occupants. No condensation to harm material or machinery.

ENGINEERING DATA—The allowable safe loads given in the table below are based on actual tests on bare plates. Application of insulation gives additional rigidity to the deck.

ALLOWABLE SAFE LIVE LOADS—POUNDS PER SQ. FT.										
U.S.S. Ga.	Clear Span									
	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	7'6"	8'0"	8'6"
22	83	66	53	44	37					
20			81	67	56	48	41			
18					71	60	52	45	39	35

Factor of safety for 22 and 20 Gauge—4.
Factor of safety for 18 Gauge—3.5.

Weight of 20 gauge deck is 2.4 lbs. per sq. ft.; 18 gauge weighs 3.2 lbs. Total dead load, including insulation and roofing material, is approximately 5 lbs. per sq. ft.

INSULATION—The accompanying table gives the heat transmission expressed in B.t.u. per hour per sq. ft. per degree difference in temperature. Five-ply roofing is included.

Deck without insulation	.781 B.t.u.'s
Deck with ½-in. insulation	.358 B.t.u.'s
Deck with 1 -in. insulation	.232 B.t.u.'s
Deck with 1½-in. insulation.....	.172 B.t.u.'s

Master Specifications

USG STEEL ROOF DECK

(1) WORK INCLUDED

NOTE—Here list the various roof areas to be constructed of USG Steel Roof Deck.

(2) MATERIALS

The steel deck shall be manufactured by the United States Gypsum Company from copper-bearing steel and painted light gray after fabrication.

Deck plates shall have reinforcing ribs not more than 6 in. O.C., 1½ in. deep, ½ in. wide at base. Plates shall have stiffening beads formed into the plates midway between the reinforcing ribs. Deck plates shall be U.S.S. No. [specify] gauge.

Clips shall be furnished for securely fastening the deck plates to the purlins, and for interlocking adjoining deck plates together at the ends and midway between the purlins.

(3) ERECTION

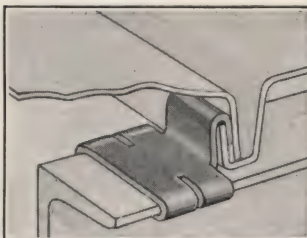
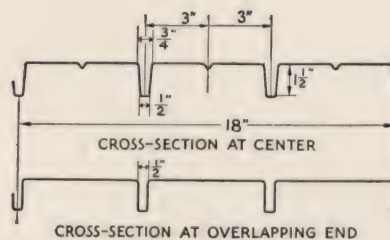
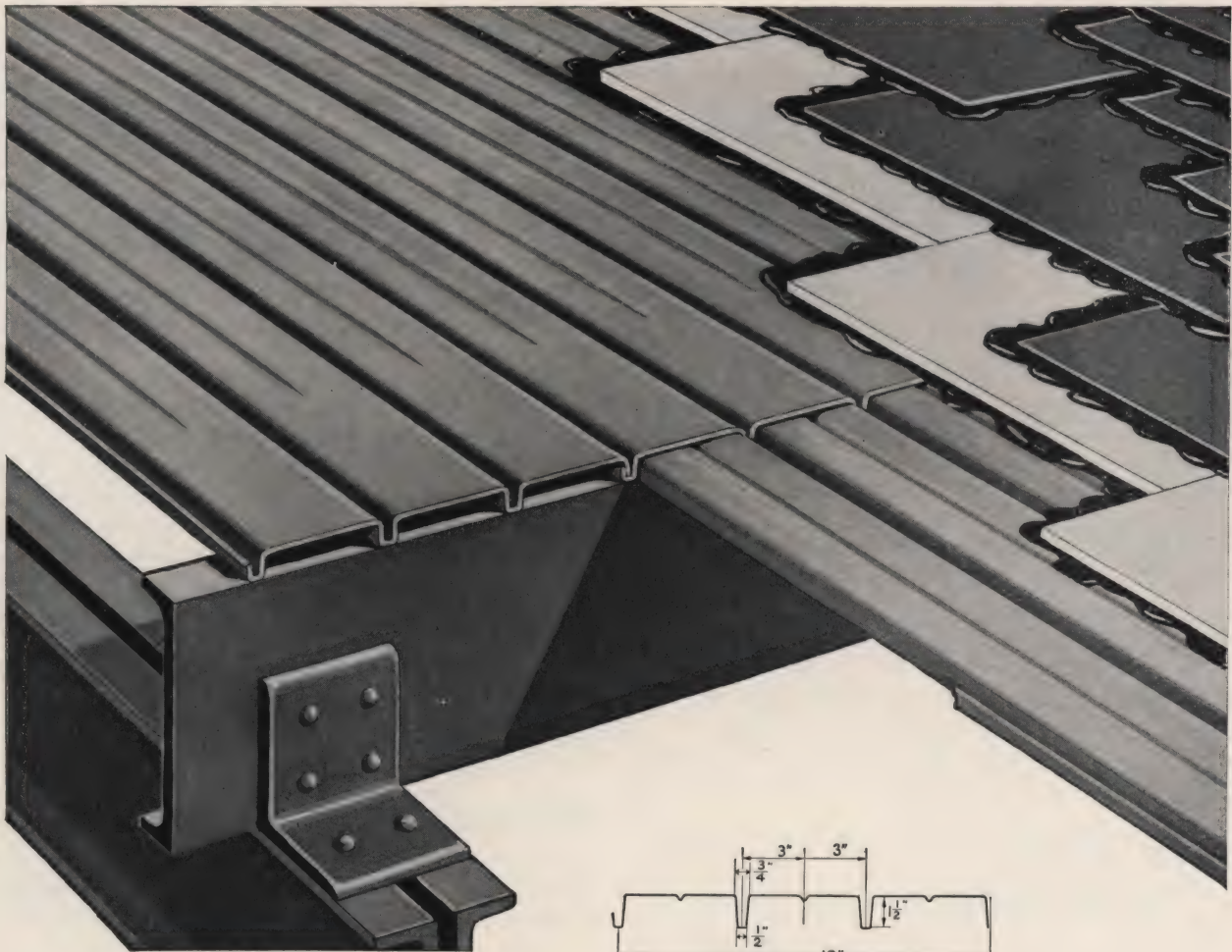
Erection shall be done by an experienced erector, subject to the architect's approval.

All end laps shall be not less than 2 in. in length and shall be made directly over the purlins.

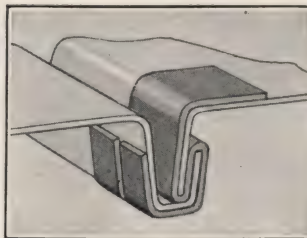
Each plate shall be securely fastened to the purlin by [steel clips engaging the deck rib] [welding].

Each plate shall be securely fastened to the adjoining plate by at least three intermediate clips.

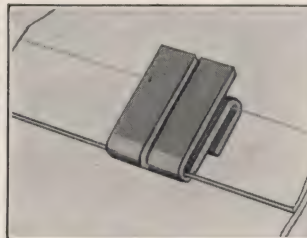
DETAILS of USG STEEL ROOF DECK



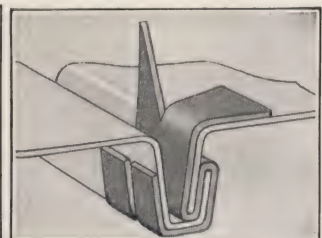
RD-1 PURLIN CLIP for securing deck plates to purlins. Made in two types. On I-Beam purlins, use type "B" clips. On channel purlins and bar joists, use type "C" clips. Made from No. 16 ga. electro galvanized steel.



RD-2 INTERMEDIATE CLIP for interlocking deck plates on flat roofs. Clips are installed at each purlin support and between them on wide spans, and bent to fit as shown above. Made from No. 20 ga. electro galvanized steel.



RD-3 END CLIP. Used on USG Steel Roof Deck plate ends to prevent any possible slippage when installed on pitched roofs. Sufficiently long to permit full two-inch end lap. Made from No. 20 ga. electro galvanized steel.



RD-4 INTERMEDIATE CLIP for use on steep, pitched steel deck roofs. The prong provides a method for securely attaching the insulation. Except for this feature, the clip is identical with RD-2, and is similarly used.

PYROBAR PARTITION and FURRING TILE, COLUMN, BEAM and GIRDER FIREPROOFING

DESCRIPTION

GENERAL—Pyrobar Gypsum Tile consist of 97% gypsum and 3% special wood fiber. They are moulded in steel moulds by continuous automatic machine process, which insures accurate proportions and an even distribution of gypsum, fiber and water, resulting in tile of uniform size, weight, strength and density.

PARTITION AND FURRING TILE—A Pyrobar tile is 30 in. long, 12 in. high and of various thicknesses from 1½ to 6 in. For complete sizes and weights, see table on page 16.

Smooth face tile are made for warehouse and similar use where the furring and partitions are to remain unplastered.

Pyrobar tile meets fully the standard specifications for Gypsum Partition tile or block of the American Society for Testing Materials.

All Pyrobar Gypsum Tile are trade-marked for the protection of owners, architects, engineers and contractors.

COLUMN COVERING—Column fireproofing is accomplished either with 2 in. solid or 3 in. hollow Pyrobar Partition Tile. When desired, or required by a building code, the space between the covering and the steel may be solidly backfilled with pieces of Pyrobar Tile and gypsum mortar.

BEAM AND GIRDER FIREPROOFING—Beam and Girder Fireproofing employs shoe tile, angle tile, soffit tile, and standard Pyrobar partition tile. (See page 17.)

Pyrobar Shoe Tile, which fit over the lower flanges of the steel, in combination with Pyrobar Partition Tile for side protection are used as beam fireproofing for sections with a flange width not over 9 in. They are moulded in a double unit, 18 in. long, sufficient for 18 in. of beam. They are light in weight, easily split, and placed with a minimum quantity of mortar and labor. The double unit reduces breakage during shipment and handling.

For rolled sections and built-up members with flange widths of 3 in. to 17 in. Pyrobar soffit tile may be used in combination with Pyrobar partition tile for a side covering. The soffit tile are channel shaped to protect the bottom and also the edges of the lower flange. They are specially moulded at the mill in 13 standard widths and in standard 36 in. lengths. For jobs of appreciable size, special soffit tile of the same type will be manufactured to fit any built-up member.

These constructions provide a full two inches of protection to all parts of the steel, and fulfill the require-

ments of the National Board of Fire Underwriters.

SET FAST* CEMENT—This is a specially prepared gypsum cement used with water and sand as a mortar for setting gypsum partition tile, and gypsum fireproofing and column covering. It is also extensively used as a mortar for interior clay tile partitions and fireproofing. Its easy working qualities together with the early strength of the gypsum makes Set Fast Cement Mortar ideal for economical rigid mortar joints in all interior tile work.

APPROVED USES—In the following classes of fireproof construction, Pyrobar Precast Gypsum Tile are approved by the Underwriters' Laboratories, Inc., and most city building codes.

Non-bearing corridor walls, partitions, wall furring and false columns and pilasters. Partitions and corridors in merchandise storage warehouses.

Fire division walls.

Elevator, stairway, dumbwaiter and corridor enclosures.

Light wells, pipe chases, heat and vent ducts.

As covering for columns, beams, girders, trusses and other steel members requiring fireproofing.

Floor fill, instead of cinder concrete fill.

Fireproof insulation on concrete roofs.

RECOMMENDED THICKNESS—PARTITION AND FURRING TILE—Pyrobar Gypsum Tile for furring and partitions are made in standard face dimensions (12 x 30 in.) in both solid and hollow types, and various thicknesses to meet Underwriters' standards and the building codes of the various cities. For table of sizes and weights, see page 16.

The thickness of the partition should be determined primarily by the ceiling height and by its location. As a rule 3 or 4-in. tile is the thickness used for the average building where partitions do not exceed 15 ft. in height. Corridor partitions are generally thicker than transverse partitions.

Two-inch solid Pyrobar Tile are used for partitions not exceeding 10 ft. in height and for covering columns, constructing pipe chases, vent ducts, dumbwaiter shafts, etc.

Split and hollow Pyrobar Furring are laid up against exterior walls and securely spiked every square yard. Joints should be broken the same as for partition work. Furring may also be fastened to the building wall by means of wall ties built into the masonry. The hollow portion of the tile should be placed against the walls, thus minimizing the contact area with the outside walls.

*Trade-Mark

Where furring stands free from the wall, allowing space for pipes, vents, etc., it is customary to use 2-in. solid or 3 or 4-in. hollow Pyrobar Tile to assure necessary rigidity.

Free standing furring should be anchored to the exterior wall either by dwarf walls between the furring

and exterior wall, or by building into the exterior wall corrugated metal wall ties of sufficient length to span the space and be embedded in the furring tile joints.

ERECTION SERVICE—Where desired, Pyrobar Tile are completely erected by the USG Engineering Sales Division.

ADVANTAGES

NOTE—See "Why Gypsum - General Technical Data," page 1, and particularly the "Summary of Gypsum Advantages," page 2.

FIREPROOF—Gypsum Tile alone have successfully passed the Underwriters' requirements for fireproof partitions.

LIGHT WEIGHT—See pages 1 and 2.

IDEAL PLASTER BASE—See page 2.

EASILY AND CHEAPLY ERECTED—The large, uniform units are much easier and therefore cheaper to erect than other masonry partition units.

PLASTER SAVINGS—Pyrobar Tile are cast in steel moulds assuring a product with straight edges and true faces. This insures a perfectly even, true wall which takes a minimum amount of plaster.

Experience shows that plastering over Pyrobar Tile requires only 80% as much plaster as over clay tile.

ECONOMICAL—Breakage is almost negligible. Cutting around openings and pipes does not cause waste as all the pieces can be used, whereas with clay tile a full tile is usually wasted in cutting even a small piece.

Ordinarily from 5 to 7% less Pyrobar Tile is required for a job than clay tile.

ALTERATIONS—Alterations in the partitions after completion of the building are easily made. Additional openings in Pyrobar walls may be cut with a saw, thus saving replastering, patching debris, and time.

FOUNDATIONS—Grounds for plastering are nailed directly to the tile. Nailing blocks may be spiked to the tile ends for the support of wood trim, blackboards, etc. Heavy fixtures may be supported by bolting through the walls using large metal washers on the bolts.

SPECIAL SHAPES—Pyrobar Tile are made in special shapes and sizes to fit all conditions.

WEIGHT OF FIREPROOFING PER LIN. FT. OF BEAM IN LB.

Size member	Precast Gypsum	Clay Tile	Concrete
6 in. I	19	33	60
7 in. I	21	36	71
8 in. I	23	39	93
9 in. I	25	43	95
10 in. I	27	47	118
12 in. I	30	51	131
15 in. I	35	60	168
18 in. I	42	68	208
20 in. I	44	73	234
21 in. I	48	79	293
24 in. I	52	85	297

SIZES AND WEIGHTS OF PYROBAR PARTITION AND FURRING TILE

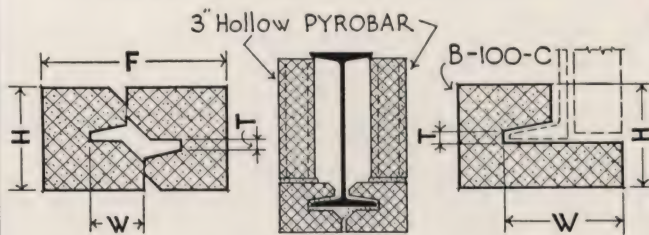
Size of Pyrobar. Gypsum Tile, In.	Recom- mended heights for each size	Weight tile per sq. ft., lb.	Weight mortar per sq. ft., lb.	Weight plaster, one side, per sq. ft., lb. ½ in. grounds	Total weight plastered, one side, per sq. ft., lb.	Weight plaster two sides per sq. ft., lb.	Total weight plastered, two sides, per sq. ft., lb.
1½-in. Split.....1½ x 12 x 30	Furring†	4.9	1.4	3	7.9		
2-in. Split.....2 x 12 x 30	Furring†	6.4	1.4	3	9.4		
2-in. Solid.....2 x 12 x 30	10 feet*	9.4	1.5	3	12.4	6	15.4
3-in. Hollow.....3 x 12 x 30	13 feet*	9.9	2.0	3	12.9	6	15.9
3-in. Solid.....3 x 12 x 30	15 feet†	13.0	2.0	3	16.0	6	19.0
4-in. Hollow.....4 x 12 x 30	17 feet*	13.0	2.5	3	16.0	6	19.0
5-in. Hollow.....5 x 12 x 30	20 feet*	15.6	2.75	3	18.6	6	21.6
6-in. Hollow.....6 x 12 x 30	30 feet*	16.6	3.0	3	19.6	6	22.6

*Underwriters' Laboratories recommendations.

†No Underwriters' recommendation.

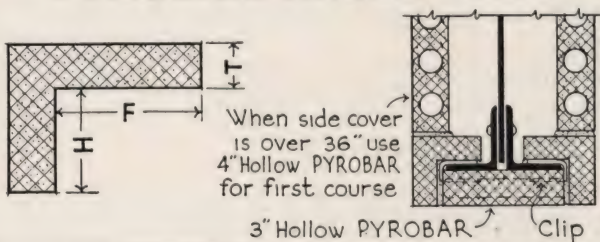
PYROBAR BEAM and GIRDER FIREPROOFING **WEIGHTS of SHOE TILE, ANGLE TILE and SOFFIT TILE** **PER LINEAL FOOT OF BEAM**

PYROBAR SHOE TILE



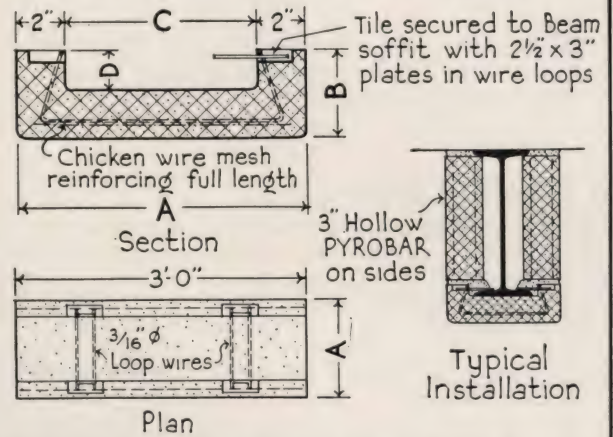
TYPE	MAX. WIDTH OF FLANGE	F	H	T	W	WEIGHT PER LIN. FT.
B-40	5"	7 ⁵ / ₈ "	4 ¹ / ₄ "	1/2"	2"	12.5 lbs.
B-50	6"	8 ¹ / ₄ "	4 ¹ / ₄ "	5/8"	2 ¹ / ₂ "	13
B-65	7 ¹ / ₂ "	9 ³ / ₄ "	4 ¹ / ₄ "	13/16"	3 ¹ / ₄ "	15
B-80	9"	10 ¹ / ₂ "	4 ¹ / ₄ "	15/16"	4"	16
B-100-C	Channels		4 ¹ / ₂ "	1/2"	4 ⁷ / ₈ "	15

PYROBAR ANGLE TILE



TYPE	F	H	T	WEIGHT PER LIN. FT.
L-34	3"	4"	2"	15 lbs.
L-45	4"	5"	2"	18.5
L-46	4"	6"	2"	20

PYROBAR SOFFIT TILE



TYPE	A	B	C	D	WEIGHT PER LIN. FT.	MAX. WIDTH OF FLANGE
B-30-S	7 ¹ / ₄ "	3"	3 ¹ / ₄ "	1"	8 lbs.	3"
B-40-S	8 ¹ / ₄ "	3 ¹ / ₄ "	4 ¹ / ₄ "	1 ¹ / ₄ "	9	4"
B-50-S	9 ¹ / ₄ "	3 ¹ / ₄ "	5 ¹ / ₄ "	1 ¹ / ₄ "	10	5"
B-60-S	10 ¹ / ₄ "	3 ¹ / ₄ "	6 ¹ / ₄ "	1 ¹ / ₄ "	11	6"
B-70-S	11 ¹ / ₄ "	3 ¹ / ₂ "	7 ¹ / ₄ "	1 ¹ / ₂ "	12	7"
B-80-S	12 ¹ / ₄ "	3 ¹ / ₂ "	8 ¹ / ₄ "	1 ¹ / ₂ "	13	8"
B-90-S	13 ¹ / ₄ "	3 ¹ / ₂ "	9 ¹ / ₄ "	1 ¹ / ₂ "	14	9"
B-100-S	14 ¹ / ₄ "	3 ³ / ₄ "	10 ¹ / ₄ "	1 ³ / ₄ "	15	10"
B-115-S	15 ³ / ₄ "	3 ³ / ₄ "	11 ³ / ₄ "	1 ³ / ₄ "	16	11 ¹ / ₂ "
B-130-S	17 ¹ / ₄ "	3 ³ / ₄ "	13 ¹ / ₄ "	1 ³ / ₄ "	17 ¹ / ₂	13"
B-145-S	18 ³ / ₄ "	4"	14 ³ / ₄ "	2"	19	14 ¹ / ₂ "
B-160-S	20 ¹ / ₄ "	4"	16 ¹ / ₄ "	2"	20 ¹ / ₂	16"
B-175-S	21 ³ / ₄ "	4"	17 ³ / ₄ "	2"	22	17 ¹ / ₂ "



Pyrobar Beam and Girder Fireproofing Used in New Chicago Post Office—Graham, Anderson, Probst and White, Architects

Master Specifications

CORRELATIVE PROVISIONS

(Applying to Pyrobar Partitions, Furring and Column Covering)

NOTE—The following should be included under other specification divisions where and when they apply.

NOTE—Notes are explanatory or advisory only and should not be included in the specifications.

(1) MASONRY WORK

NOTE—As stated under "Recommended Thickness," page 15, there are two methods of securing furring and the ends of partitions to the building masonry walls: (1) with 10d cut nails driven into the joints of the masonry, (2) with corrugated metal wall ties of the proper length to be built into the masonry, spanning furring space if any and to be embedded in the Pyrobar Tile joints. If method (2) is used, include the following clause:

(1a) Provide and build into masonry walls corrugated galvanized sheet iron ties to anchor the [ends of Pyrobar partitions] [and] [Pyrobar Wall Furring] to the masonry work.

(1b) Ties for partition ends shall be accurately set and spaced 12 in. apart o.c. to build into the Pyrobar Tile joints.

(1c) Ties for furring, one for each surface, sq. yd., shall be accurately set to build into the Pyrobar Tile joints.

(2) MISCELLANEOUS STEEL WORK

(2a) All openings in Pyrobar partitions so noted on plans or schedules shall be provided with (channel bucks) (channels reinforcing wood bucks).

(2b) The lintel bucks of all openings in Pyrobar partitions over 6 ft. wide shall be reinforced with steel lintels as [noted on plans or schedules] [as detailed].

(3) REINFORCING BARS

All openings in Pyrobar partitions over 4 ft. wide but not over 6 ft. wide shall be provided with ½ in. steel reinforcing bars, 3 to

the opening. Bars shall be 8 in. longer than the actual width of tile opening (not buck width).

(4) CARPENTRY WORK

(4a) **BUCKS**—Provide wood bucks for all openings in Pyrobar partitions [except where steel bucks are indicated] [reinforced with steel channels where so indicated]. Bucks shall be made of 2-in. lumber the depth of the Pyrobar Tile thickness, to the edges of which shall be secured ½ x 2¾ in. plaster grounds forming a rabbet to receive the tile. Bucks shall be accurately set, plumb and true and rigidly braced, so as to cause no delay or interruption in the erection of the partitions.

(4b) **NAILING BLOCKS**—Provide and nail directly to the end of Pyrobar [partition] [and] [furring] tile nailing blocks spaced 30 in. on centers to take all wood grounds to receive trim. Blocks shall be ¾ in. thick and of such dimensions as will completely cover the end of the tile.

Where required to secure heavy fixtures, trim, etc., provide similar 1½-in. thick nailing blocks spaced not to exceed 15 in. on centers.

(4c) **GROUND**S—Provide ½-in. plaster grounds to receive all trim.

(5) MISCELLANEOUS

NOTE—Heavy fixtures, etc., are best secured to Pyrobar partitions with steel plates and through bolts as described on page 16 (under "Grounds"). Provide where required.

(6) PLASTERING

NOTE—For Plastering on Pyrobar, see Sweet's File Index for USG "Master Specifications—Interior Lathing and Plastering." Under no circumstances should Portland cement or lime plaster be used for the first coat—use only gypsum plaster.

PYROBAR, PARTITIONS, FURRING and COLUMN COVERING

NOTE—Notes are explanatory or advisory only and should not be included in the specifications.

(1) WORK INCLUDED

All partitions [and] [all furring for exterior masonry walls] [and] [all column covering] shall be built of Precast Pyrobar Gypsum Tile.

NOTE—If there are any exceptions, so note. List and locate any special requirements not clearly indicated on plans and details. Particularly list and locate where smooth face tile are to be installed requiring no plaster finish.

(2) PRELIMINARY PROVISIONS

(2a) All reinforcing bars for reinforced lintels will be furnished by others.

(2b) All rough bucks for openings will be provided and accurately set by others.

(2c) All wood nailing blocks to receive grounds, etc., will be provided and attached to tile by others.

(3) MATERIALS

(3a) **GENERAL**—All gypsum tile and cement shall be as manufactured by the United States Gypsum Company.

(3b) **PARTITION TILE**—Pyrobar of thicknesses indicated on plans. [Pipe chases] [small shafts] [heat] [and] [vent] [ducts] etc. shall be constructed preferably with 3-in. Hollow Pyrobar, otherwise of 2-in. solid Pyrobar.

Where no plastering is required, tile shall be smooth face.

(3c) **FURRING TILE**—Pyrobar [split] [solid] [specify thickness]. Where no plastering is required, tile shall be smooth face.

(3d) **COLUMN COVERING**—Pyrobar [2-in. solid] [3-in. hollow].

(3e) MORTAR—Sand for mortar shall be clean and sharp and free from organic matter.

Cement for mortar shall be Setafast Gypsum Cement.

NOTE—Do not use Portland cement or lime.

Mortar shall be mixed in a clean mortar box in the proportions of one part of cement to three parts of sand, by weight, and sufficient clean water to bring to the right consistency. First place a layer of sand in the high end of the mortar box, over which spread a layer of cement. Hoe dry from one end of the box to the other and back again, working sand and cement thoroughly together to a uniform color. Put water in low end of box and hoe mortar into water, mixing thoroughly. Do not mix more material than can be applied in approximately one hour. Do not retemper.

(4) ERECTION

(4a) BY USG CO.—All Pyrobar [partitions] [and] [furring] [and] [column-covering] shall be completely erected by the United States Gypsum Company's Engineering Sales Division.

(4b) GENERAL—All tile shall be laid in gypsum mortar with full, flush joints to a line, with horizontal beds uniformly level on each course. All joints, chinks and crevices between the tile and other work shall be filled with mortar well slushed in. Joints in alternate courses shall be broken.

All joints of smooth tile (unplastered) shall be neatly pointed smooth as the work progresses. Fill all exposed core openings at corners, etc.

All tile shall be started on the fireproof floor, set plumb straight and true, and wedged at ceiling and slushed with mortar. Tile at corners and re-entrant angles shall be laid interlocked in alternate courses.

(4c) PARTITIONS—All partitions coming in contact with existing wall shall be rigidly anchored, [by driving 10d spikes into the mortar joints of the wall at the joints of each partition tile course] [by building in at each partition tile course metal ties provided and built into the masonry by others].

(4d) FURRING—Furring shall be laid [against] [or] [free from] the walls as shown on the plans and details.

Rigidly anchor the furring tile to the masonry wall every square yard of the face area [by 10d spikes driven into the mortar joints of the wall at the course joints of the furring tile] [by building in at the furring tile course metal ties provided and built into the masonry by others].

(4e) COLUMN COVERING—A single thickness of tile shall be laid against the outside edges of the steel [and the space between the tile and steel shall be solidly backfilled with pieces of Pyrobar tile and gypsum mortar].

NOTE—Include or omit clause covering backfilling as required.

(4f) BUCK ANCHORS—Anchor all wood bucks to tile by 10d cut nails driven into the buck at each tile course or other approved metal anchor.

(4g) LINTELS—Lintels shall have at least 4-in. bearing at each end on the tile beneath. Openings not over 22 in. wide shall be spanned by a single tile. Lintels over openings more than 22 in. and not over 4 ft. wide shall be laid in the form of a jack-arch. Lintels over openings more than 4 ft. and not over 6 ft. wide shall be reinforced with steel rods set in the tile voids flushed full with mortar. Lintels over openings more than 6 ft. wide shall be provided with steel lintel furnished by others.

PYROBAR BEAM and GIRDER FIREPROOFING

NOTE—Notes are explanatory or advisory only and should not be included in the specifications.

(1) WORK INCLUDED

All steel [beams] [girders] [trusses] shall be protected with precast gypsum fireproofing.

NOTE—List and locate any special requirements not clearly indicated on plans and details. Note exceptions if any.

(2) MATERIALS

(2a) FIREPROOFING—All fireproofing shall be Pyrobar Beam Shoe, Angle and Soffit Tile, and Pyrobar (2 in. solid) (3 in. hollow) Parti-

tion Tile as made by the United States Gypsum Company. All steel shall be protected with a minimum of 2 in. of precast gypsum.

(2b) MORTAR—NOTE—Same as "(3e) Mortar" above.

(3) ERECTION

(3a) BY UNITED STATES GYPSUM COMPANY—All fireproofing shall be completely erected by the United States Gypsum Company's Engineering Sales Division.

(3b) GENERAL—All fireproofing shall be erected in strict accordance with the United States Gypsum Company's standard details. All units shall be laid in gypsum mortar with full flush joints, true to line and plumb. Joints in alternate courses shall be broken.





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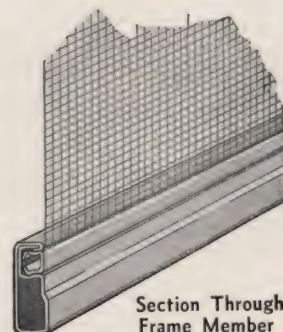
Products

CECO REINFORCING BARS; MEYER REMOVABLE STEELFORMS; CECO STEEL JOISTS; WIRE FABRIC REINFORCEMENT; METAL LATHING MATERIALS; BAR CHAIRS and SPACERS; ADJUSTABLE SHORES and COLUMN CLAMPS; ROAD BUILDING MATERIALS; STEEL WINDOWS; STEEL DOORS; METAL WEATHERSTRIPS; METAL FRAME SCREENS; DETENTION WINDOWS.

Ceco
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PRODUCTS

frames are easily rewired.

Steel Sash Screen—Ceco Screens are designed for all types of steel sash. Satisfactory and efficient results are obtained due to simplicity of all installations.



Section Through Frame Member

Meyer Steelform Construction



Meyer Steelforms

A standard system that represents the highest type of concrete joist floor construction in present day use. It consists of rows of heavy gauge removable steelforms, separated by reinforced concrete joists, and covered by a thin slab of concrete. Metal lath furring may be used beneath to provide a flat ceiling for plastering.

Meyer Steelforms are handled on a rental basis only. Ordinarily labor of installing and removing steelforms by our skilled workmen is included with the rental charge. Economy in the re-use of Meyer Steelforms on

a rental basis is readily apparent.

Ceco Reinforcing Bars

Bars are rolled from new billet steel and are furnished both as plain rounds and as deformed rounds and squares. They can be furnished promptly, cut to length and bent, or in stock lengths. Reinforcing bars rerolled from steel rails are used in some localities and are also available at our warehouses in the plain and deformed sections.

Ceco Steel Joists

Steel joists are commonly used to support a concrete slab poured on a self-centering form on top of the joist and protected with a fire-resisting ceiling construction attached to the bottom of the joist. This system of floor and roof construction is light in weight, quickly installed and of a fireproof nature. Ceco Steel Joists are of an open web type so that heating and plumbing pipes can be easily installed and concealed.

Wire Fabric Reinforcement

Ceco Electrically Welded and Triangle Fabric consists of cold drawn wires welded or woven together, forming a closely spaced mesh of square, rectangular and triangular shape, and is particularly adapted for many uses as tension reinforcement for concrete.

Ceco Metal Lathing Material

Includes expanded metal lath, rib lath, all types of corner bead, base bead and picture mould, hot or cold rolled furring channels, pencil rods, angles, tees, flats and tie wire.

Ceco Accessories

Include all types of metal or wire beam, joist and slab bar spacers, screed chairs, bar ties, reed clips and anchor slots.

Ceco Metal Window Screens

These are made for all types of windows, both steel and wood, and are individually fabricated to assure perfect installation. All

Materials Used—Ceco Screens are made of heavy electro galvanized copper bearing steel finished in enamel, baked on. Also manufactured in heavy rolled bronze, or from aluminum extruded or tubular sections. Bronze screen cloth, 16-mesh, is the standard for Ceco Screens. Other mesh furnished when required.

Ceco Steel Windows, Doors and Mechanical Operators

Ceco Architectural Projected Windows—Large glass lights attractively arranged. Screened type as well as standard type. Excellent for schools and hospitals.

Ceco Pivoted Windows—A sturdy, weatherproof window for general industrial use.

Ceco Commercial Projected Windows—Standard and screened type available. Easily and economically screened.

Ceco Casements—For residential buildings. Flat screens and under screen operators. Neat and attractive hardware.

Ceco Continuous Windows and Tension Operators—For use where large areas of light and ventilation are required.

Ceco Basement Windows—Brighten the basement. Do not stick, warp nor swell. Weathertight.

Ceco Industrial Doors—Heavy channel frame construction. Built to stand the wear and tear of industrial use. A permanent investment.

Ceco Rack and Pinion Operator—For long lines of ventilators. Cold rolled steel rack and pinions with machine cut teeth.

Ceco Torsion Operator—For group control of pivoted or projected ventilators. Machine cut cast gears and cut steel worms—a lifetime operator.



Section Through Jamb

Ceco "Slide Lock" Weatherstrip

A proven product, offering many important new advantages in design and operation. When installed, Ceco "Slide Lock" is fully concealed. Metal-to-metal contact—metal sliding on metal—insures easy operation of windows at all times. Good, weathertight installations assured, regardless of warpage, because of maximum flexibility. Highest efficiency assured.

Ceco Weatherstrips are installed by authorized Ceco Dealers or direct factory branches.

Ceco Calking Cement

A scientifically prepared plastic calking compound which never dries, runs, cracks, hardens or pulls away. Forms a perfect bond with any surface.

Catalogues

Complete descriptive catalogues on above subjects furnished free of charge.

H. H. ROBERTSON COMPANY

Robertson World-Wide Building Service

PITTSBURGH, PA.

FACTORIES: AMBRIDGE, PA.; SARNIA, ONT., CANADA; ELLESMERE PORT, CHESHIRE, ENG.

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Products

ROBERTSON CELLULAR STEEL FOR FLOORS, WALLS AND ROOFS.

For Robertson Protected Metal (RPM), corrugated roofing, siding, building trim and steel



Patents: Robertson Cellular Steel for Floors, Walls and Roofs is protected by United States Patents Nos. 1,855,082; 1,867,433; 1,986,121; 1,986,122; and 1,994,113.

ROBERTSON CELLULAR STEEL FOR FLOORS, WALLS AND ROOFS

A complete unit building system of cellular structure, taking the form of hollow steel beams. Offers the architect the important advantages of *economy* and *speed* in construction together with an *electrical flexibility* hitherto unknown.

This product is the result of years of development work at the Mellon Institute of Industrial Research and the plant laboratories of the H. H. ROBERTSON COMPANY. Each unit is built by preforming two steel sheets and subsequently welding these two sheets together. The unit, as delivered to the construction job, is either two cells (12 ins. wide), or four cells (24 ins. wide), and with a 24-ft. maximum span. The maximum weight per unit, except in special cases, is about 400 lbs. Generally, the average unit weighs less than 250 lbs. The design is such as to develop maximum efficiency of the metal.

Used for Floors

All floor requirements of modern buildings are met by Robertson Cellular Steel.

Strength—Robertson Cellular Steel has exceptional strength, and provides for all combinations of floor

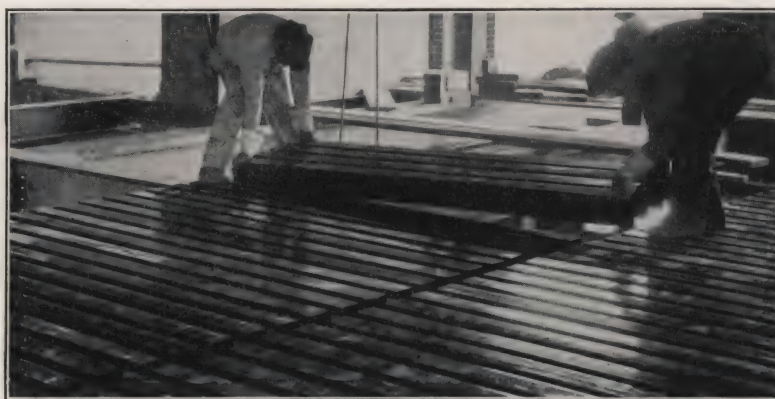
decks; Robertson Ventilators, gravity and fan types; Robertson Louvres, Hoods and Ducts, Robertson Skylights and Sash (puttyless type), and Floor Wiring Systems, see File Index.

loads up to 500 lbs. or more per square foot, and for all required span lengths. Deflections under given load conditions can be predetermined. Load tables are available, based on tests made by the U. S. Bureau of Standards. (Write for a reprint of the report which appeared in the August 1932 Bureau of Standards Journal of Research.)

Economy—This floor is more economical because it eliminates expensive electrical duct systems; speeds up construction (thus eliminating unproductive interest time on construction funds and making possible earlier occupancy and more revenue); has a high salvage value; provides flexibility for alterations in case of occupancy changes; and reduces first cost, because light weight and strength of floor cuts down amount of forms and structural steel necessary for construction.

Electrical Flexibility

—Overcomes the inadequacies of present-day floor duct systems at a minimum cost by combining the features of both a floor and an electrical duct system. Each parallel cell (with a 6-in. spacing) is a potential conduit or raceway for electrical wiring; straight and free from interior obstructions and readily accessible,



Showing the Ease with Which the Floor Units Are Laid in Place

They are then welded, bolted or clipped to the supporting framework. Any type of floor finish or ceiling may be applied. Each cell provides a potential raceway for installation of electrical wiring required by tenants for present or future use

so that wires need not be drawn through until needed; but can be fished in at any time and place desired without necessitating the tearing up of floors or the disturbing of any arrangement not convenient for that purpose. Thus, this floor makes possible the installation of an electrical outlet wherever and whenever desired—and prevents the possibility of electrical obsolescence. The standard baked-on asphaltic enamel finish meets the requirements of the Underwriters' Laboratories, Inc., for under floor wire raceways.

Adaptability—Any type wearing surface desired may be applied to Robertson Cellular Steel Floors. The surface is level and does not vary more than $\frac{1}{8}$ in. It is uniform in appearance on the underside and often requires no ceiling (attractive decorative

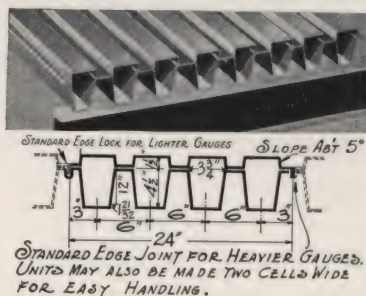
schemes may be used on the underside of the floor). It is incombustible and often requires no fireproofing. However, ceilings of any kind can be applied to it at no more cost than for other types of floors. This floor is particularly adapted to service installations. If holes are cut through the floor the surrounding steel can be reinforced to restore original strength, if necessary.

Used for Walls and Roofs—Robertson Cellular Steel Units are being used successfully for wall and roofs of houses and other types of buildings. As explained more fully on the next two pages, the many unique advantages of this type of construction have been evident at once to architects, builders and owners to whom demonstrations have been made.

INDEX TO TYPES OF UNITS

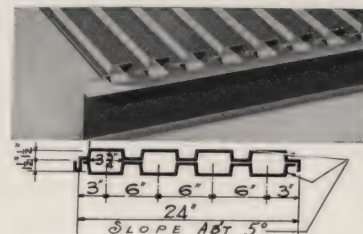
K-Type Unit

Fundamental keystone-shaped unit for average loading on spans from 12 to 16 ft. Adaptable to all general floor construction and to installations requiring fireproofing or fill with lightweight concrete, etc. Any type of floor finish may be laid on the concrete surface. Gauges 16-16, 14-14, 12-12, 10-10, 7-7, or combinations thereof.



RK-Type Unit

The combination of two of the U-shaped upper plates of the fundamental keystone structure, making a rectangular cell which is well adapted to the fishing through of electrical wiring, etc. Also desirable for apartment houses, schools, stores, etc., where loads are not excessive, and it is desired to limit floor thickness as much as possible. For loads from 75 to 400 lbs. per square foot on spans from 6 to 12 ft.

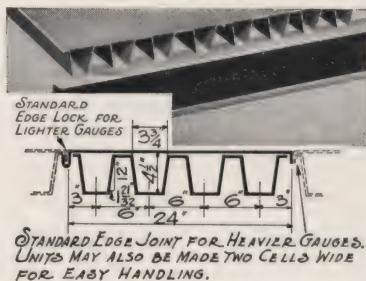


Adaptable to installations requiring concrete or similar materials for fill or fireproofing.

Any type of floor finish may be applied on the concrete surface. Gauges 16-16, 14-14, 12-12 or combinations thereof.

FK-Type Unit

Combination of flat plate with bottom element of the K-Type Unit. Used where loads are not in excess of 125 lbs. per square foot and spans are 10 to 15 ft. Adaptable for installations not requiring fireproofing, and for floor finishes such as rubber tile, linoleum, mastics, wood parquetry, etc.



Aside from use as flooring, it is used for walkways without any surfacing, for grandstand seat banks, and (in the inverted position) for highway bridge floors, prison floors, etc.

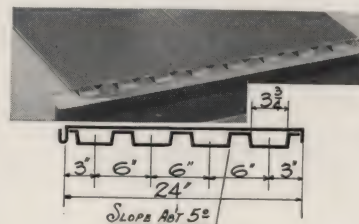
DK-Type Unit (Not Illustrated)

Made by combining two bottom elements of the fundamental keystone structure.

For use only on special occasions, and subject to advice of the H. H. ROBERTSON COMPANY'S Engineering Department.

UK-Type Unit

Combination of a flat plate with the U-shaped top plate of the fundamental keystone structure. Desirable where a flat floor finish is desired and the thickness of the floor surface must be limited. Is applicable for roof decks, floor for library bookstacks, balconies, etc. For loads of less than 200 lbs. per square foot on spans of $4\frac{1}{2}$ to 8 ft.



Adaptable to linoleum, rubber tile, mastics, etc., for floor finishes. Gauges 16-16, 14-14 or combinations thereof.

Note: Catalogue giving complete design data and load tables is available.

THE ROBERTSON ELECTRICAL DISTRIBUTION SYSTEM



In order to make full use of the wiring distribution properties of Robertson Cellular Steel Floors, a set of unit fittings has been devised for the purpose of continuing wiring from the source of feed to the cell in which it is desired to locate an outlet. One or more of the unit duct feeders illustrated herewith are placed for each type of distribution desired. The units are interchangeable, and access ports can be placed on any centers that are multiples of 6 in.

The adjustable covers act as screeds and are at the finish fill line. The floor covering conceals them. They are readily identified for future wiring by markers. When a unit must be used, the floor covering is removed at the particular location desired. After the installation of wiring, a floor covering adaptor is placed. For pages containing complete explanation, see File Index.

ROBERTSON CELLULAR STEEL FOR RESIDENCES



A Robertson Cellular Steel Floor Installed in a Moderate Priced Home

Where the beamed side is up, a flat ceiling underneath results. Where the flat side is up, a beamed ceiling underneath results



The Flat Ceiling Produced by Robertson Cellular Steel Floor May Be Painted with Plastic Paint to Match Plaster Walls



Attractive Kitchen with the Flat Steel Ceiling Painted with Oil Paints and the Joints Striped in a Contrasting Color

Flexibility of Use

Robertson Cellular Steel Sections possess the flexibility of use once belonging only to lumber; yet they have far-reaching advantages provided only by skillfully designed and fabricated steel. As proved both by tests and actual installations, these building units are strong, lacking in bulk, flexible in use, adaptable, fire-safe, wind and earthquake-resistant, and economical to use.

These units can be used for floors, walls and roofs of houses. Although originally developed for use as floors, they are being used successfully and extensively on the West Coast for walls and roofs. Used for one, two or all three factors in the building, definite advantages are provided by Robertson Cellular Steel Units.

Used for Floors

Construction is speeded and a safe floor is provided for other trades as soon as the units are laid in place.

Electrical wiring can be run inside the cells.

Excavation, masonry and building height are saved by the unit's combination of strength with absence of bulk.

Being "dry" construction, the units enable winter work to progress.

Any wearing surface may be applied.

The underside of the inverted flat-top units commonly used for residence construction may be painted with oil or plastic paints, thus eliminating the conventional plastered ceiling. This feature brings the cost to a level comparable with contemporary types of floor construction.

Used for Walls

Some of the advantages of Robertson Cellular Steel Units, obviously, apply to their use for both floors and walls in the same degree. In addition:

FIRE-SAFE—EARTHQUAKE AND WIND-RESISTANT

Little muss is made at the building site in comparison with other types of wall construction.

Any exterior finish desired may be applied. The walls may be painted and given a very modern appearance; they may be given a sand finish; or brick veneer, wood or other finishing materials may be applied. In the interior, plastered walls are made possible by nailing wall board or insulation board directly to the steel.

These walls resist the lateral stress produced by earthquake shocks and are also resistant to the force of high winds.

Used for Roofs

Many of the advantages of Robertson Cellular Steel Units when used for floors and walls are common also to their use for roofs. Both flat and peaked roofs may be constructed of these units, which, being load bearing, provide an ideal sun deck as designed for many modern homes.

With insulation and water-proofing, the units provide a perfectly weatherproof roof.

Being incombustible, they add to the safety of the home.

Certain other advantages, common to all uses of Robertson Cellular Steel Units are elimination of the hazards of termites, dry rot, warping and shrinking and obsolescence. Soil conditions are not so important with this type of construction. There will be no hidden physical defects or decay to depreciate value in case of resale. Such a home, especially when the units are used for floors, walls and roof, should be eligible for a 20-year Federal Housing Loan at full construction value.

The H. H. ROBERTSON COMPANY has considerable interesting data on the use of Robertson Cellular Steel Units for residence construction. This data is available to responsible architects, engineers and builders.



A Typical Treatment of the Beamed Ceiling Which in This Case Is Painted Buff and Grained to Match the Woodwork



This Home Has Walls of Robertson Cellular Steel

In this case, the exterior has been given a conventional appearance by the addition of brick veneer. Any exterior finish is possible
Built by PALMER STEEL BUILDINGS, INC.



The Famous "Gold Medal House," Winner of the Gold Medal in the Better Homes in America Competition

Walls and part of roof are of Robertson Cellular Steel. Exterior surfaces of walls are painted aluminum.
Designed by RICHARD NEUTRA

REPUBLIC FIREPROOFING COMPANY, INC.

Slagblok Fireproof Floor Construction

GENERAL OFFICES

31 Union Square, NEW YORK, N. Y.

Product

REPUBLIC SLAGBLOK FLOOR SYSTEM, consisting of Slagblok units and steel bar reinforcement for concrete fireproof floor construction.

Experience

Service and materials have been furnished in connection with Republic Slagblok Floors for more than 1500 buildings.

REPUBLIC SLAGBLOK FLOOR SYSTEM

Construction

Republic Slagblok Floors consist of pre-cast slag-concrete units in combination with poured reinforced concrete ribs for use both as floor and roof slabs.

Units composed of two blocks (see detail below) placed with open sides together, measure 16x16 in. and are placed on forms, usually on 20-in. centers allowing for ribs 4-in. wide to run parallel to the supports in both directions.

The detail shows the simplest form of slab construction in which concrete ribs are poured flush with the top of the blocks. Factors entering into the design, however, frequently necessitate a topping of concrete, poured with the ribs, over the entire slab surface. A monolithic topping of this description may be left rough for fill and finish or trowelled smooth to receive carpets, linoleum or other finished floor surfaces.

Design

The Slagblok units, made of slag-concrete, are produced under a special patented process giving them a high compressive strength and a perfect bonding quality with the concrete poured around them. In the design, therefore, the net area of the blocks is considered as a structural part of the slab for both "one-way" and "two-way" construction. The latter, under ordinary conditions, is the more economical.

Complete design information will be furnished on request.

Approval

Slagblok construction has been approved by nearly all the principal cities in the East including New York, Boston, Washington, New Haven, Hartford, Albany, Syracuse, Rochester, etc.

Advantages

Flat Ceilings—The wide variety of panel sizes which may be designed economically with Slagblok construction include all the usual room sizes ranging upward to spans encountered in the large classrooms of school buildings. Clear spans within the rooms are assured, therefore, by locating beams at the partitions.

Reduced Story Heights—As all materials entering into the construction of Slagblok floors perform actual work, the System will allow for as shallow a slab as can be employed for a given span. Compared to other types of construction, Slagblok floors provide either increased ceiling heights or decreased story heights with proportional economies in masonry. In a tall building, the gain is frequently sufficient to allow for an additional story within the same building height.

Cost

Installed costs per square foot will vary with spans, loads, etc., but compare very favorably with other types of fireproof floor construction.

Service

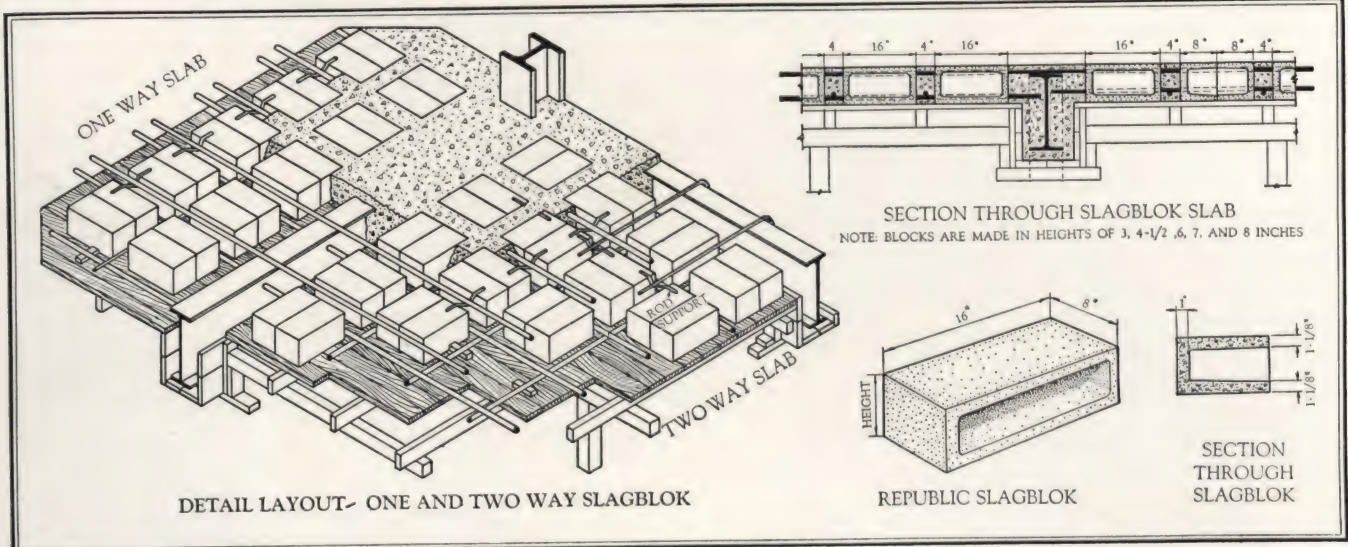
The REPUBLIC FIREPROOFING COMPANY, INC., does not contract for installation. The company sells the Slagblok units and the reinforcing bars for slabs, beams, and columns; provides, without extra charge, all working drawings in connection therewith, and also furnishes such inspection service in the field as may be deemed necessary for the satisfaction and protection of all concerned.

The engineering staff is available at any time for consultation regarding the use of the Slagblok System and will furnish estimates on prospective operations.

Recent Operations

BUILDING
Waldorf-Astoria Hotel, New York, N. Y.
City Bank-Farmers Trust Co. Bldg., New York, N. Y.
Western Union Office Bldg., Boston, Mass.
American Security & Trust Co. Bldg., Washington, D. C.
New Haven Hospital, New Haven, Conn.
Adelphi College, Garden City, N. Y.
S. H. Kress Store, New York, N. Y.
Greenwich High School Addition, Greenwich, Conn.
One Beekman Place Apts., New York, N. Y.

ARCHITECT
Schultz & Weaver
Cross & Cross
Stone & Webster
York & Sawyer
Henry C. Pelton
McKim, Mead & White
Edward F. Sibbert
Guilbert & Betelle
Sloan & Robertson



SMOOTH CEILINGS SYSTEM

(PATENTED)

802 Metropolitan Life Building

MINNEAPOLIS, MINN.

REPRESENTATIVES IN PRINCIPAL CITIES

SOME ADVANTAGES OF "SMOOTH CEILINGS," ALL FLAT, BEAMLESS FLOOR-CONSTRUCTION

For Reinforced Concrete or Structural Steel Buildings

- (1) The ceilings are flat in the construction itself.
- (2) No suspended or metal lath and plaster ceilings are required to hide the construction and make the ceilings flat. Plaster may be applied directly to the concrete ceiling, with or without bond coat, depending on conditions. Cost is thus reduced.



Construction View, "Smooth Ceilings" System All Flat Ceiling Construction

Office Building of New Minneapolis Armory, PWA Project No. 5630
Note: Main ducts for air conditioning or ventilating systems may be run on corridor ceiling with branches to rooms at ceiling. Corridor ceiling may be furred to cover ducts. No beams to interfere.

- (3) The ceilings may be finished or ground smooth and decorated on the concrete without plaster. Cost may thus be further reduced.

- (4) This system will usually save several inches in the height of each story because less height is required by the floor construction. Several feet are saved in the height of the average building. Both construction and operating costs are thus reduced.

- (5) Cost of forms for concrete is very low, and salvage on form lumber is exceptionally high, because a minimum amount of cutting and fitting is required.

- (6) Cost of plastering, finishing, decorating and lighting the building is reduced because beams, girders, drop panels and flared column caps are omitted.

- (7) Pipes and small ducts can pass through the slab around the column without interfering with the construction. Pipes can run between flanges of steel columns. Columns can thus be smaller. See Fig. A.

- (8) Load tests on this construction show very small deflections, good recovery, low stresses in the concrete and steel.

This system has been used and approved by the U. S. Government. It was used in constructing the U. S. Appraisers' Stores Building, Baltimore, Md.

We Recommend This System for the Following Buildings

Office buildings
 Hospital buildings
 School buildings
 Garage buildings
 Hotel buildings
 Club buildings
 Apartment buildings
 Manufacturing buildings
 Store buildings, warehouse buildings, etc.

Service

Prices will be quoted on the necessary steel column heads, estimates of cost and quantities of concrete, reinforcing steel and structural steel will be made from architect's preliminary sketches or working drawings. Terms for license quoted to satisfactory parties, upon application.

Fig. A

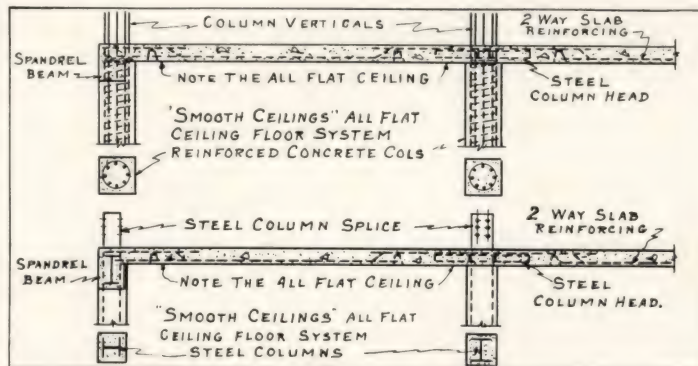
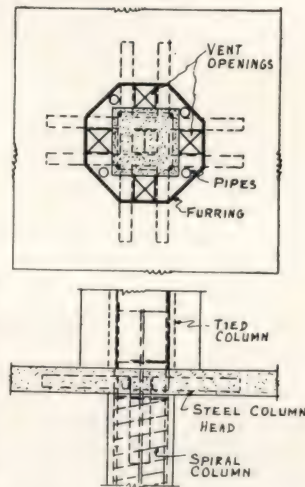


TABLE OF STANDARD SLAB THICKNESSES AND STEEL COLUMN HEAD DESIGNATIONS TO BE USED WITH STONE CONCRETE WEIGHING 150 LBS. PER CU. FT.

Span, ft.	Live load plus superimposed dead load 100 lbs. per sq. ft.		Live load plus superimposed dead load 125 lbs. per sq. ft.		Live load plus superimposed dead load 150 lbs. per sq. ft.		Live load plus superimposed dead load 200 lbs. per sq. ft.		Live load plus superimposed dead load 250 lbs. per sq. ft.		Live load plus superimposed dead load 300 lbs. per sq. ft.	
	Rough slab thickness, ins.	Column head design.	Rough slab thickness, ins.	Column head design.	Rough slab thickness, ins.	Column head design.	Rough slab thickness, ins.	Column head design.	Rough slab thickness, ins.	Column head design.	Rough slab thickness, ins.	Column head design.
Having Strength 2000 Lbs. per Sq. In. at 28 Days												
14x14	5½	14-100	5¾	14-125	6	14-150	6½	14-200	7	14-250	7½	14-300
16x16	6	16-100	6¼	16-125	6½	16-150	7¼	16-200	8	16-250	8½	16-300
18x18	6¾	18-100	7	18-125	7½	18-150	8¼	18-200	9	18-250	9½	18-300
20x20	7½	20-100	7¾	20-125	8¼	20-150	9¼	20-200	10	20-250	10½	20-300
22x22	8½	22-100	8¾	22-125	9¼	22-150	10¼	22-200	10¾	22-250	11½	22-300
24x24	9	24-100	9¾	24-125	10	24-150	11¼	24-200	12	24-250	12¾	24-300
26x26	10	26-100	10¾	26-125	11	26-150	12	26-200	13	26-250	13¾	26-300
28x28	10¾	28-100	11¾	28-125	12	28-150	13	28-200	14	28-250	14¾	28-300
30x30	11¾	30-100	12¾	30-125	13	30-150	14	30-200	15	30-250	15¾	30-300
Having Strength 2500 Lbs. per Sq. In. at 28 Days												
14x14	5½	14a-100	5½	14a-125	5¾	14a-150	6	14a-200	6¼	14a-250	6½	14a-300
16x16	5¾	16a-100	5¾	16a-125	6¼	16a-150	6¾	16a-200	7	16a-250	7½	16a-300
18x18	6½	18a-100	6½	18a-125	7	18a-150	7½	18a-200	8	18a-250	8½	18a-300
20x20	7	20a-100	7¼	20a-125	7½	20a-150	8¼	20a-200	8¾	20a-250	9¼	20a-300
22x22	7¾	22a-100	8	22a-125	8¼	22a-150	9	22a-200	9½	22a-250	10¼	22a-300
24x24	8¼	24a-100	8¾	24a-125	9	24a-150	9¾	24a-200	10½	24a-250	11	24a-300
26x26	9	26a-100	9½	26a-125	9¾	26a-150	10¾	26a-200	11½	26a-250	12	26a-300
28x28	9¾	28a-100	10	28a-125	10½	28a-150	11½	28a-200	12½	28a-250	13	28a-300
30x30	10¾	30a-100	10¾	30a-125	11¼	30a-150	12½	30a-200	13½	30a-250	14¼	30a-300

DETROIT STEEL PRODUCTS COMPANY

Manufacturers of Holorib Steel Decks and Floor Forms and
Sanacoustic Holorib Roof Units

2250 East Grand Boulevard
DETROIT, MICH.

FACTORIES
DETROIT, MICH. OAKLAND, CALIF.

For Fenestra Windows, Casements and Doors, see Index

FENESTRA HOLORIB INSULATED STEEL DECKS

The DETROIT STEEL PRODUCTS COMPANY maintains a Holorib Engineering Department thoroughly versed in all roofing problems. This department is at your service without obligation to assist in designing and specifying complete roof installations.

Specifications for the Holorib Complete Roof Unit, together with explanatory details showing the appli-

cation of the product to various types of construction are free on request. Inquiries should be accompanied by information relative to: (1) Type of Structure; (2) Form of Roof Desired; (3) Intended Operations Within the Building. Holorib Field Representatives in the major cities are equipped to aid Architects, Designers and Contractors and to furnish quotations if desired.

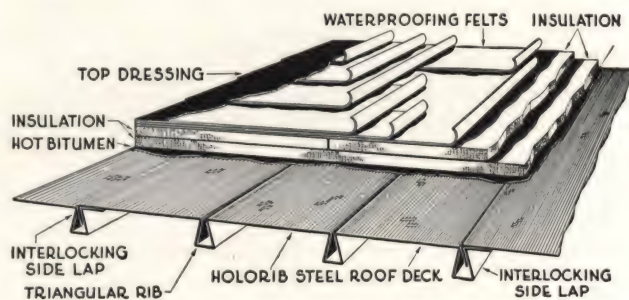
18 Fenestra Holorib Advantages

- (1) **Holorib Steel Roof Deck**—It is applied directly over purlins or rafters to form the roof sheathing or roof slab.
- (2) Carries normal roof loads over usual purlin spacings with ample factors of safety.
- (3) End laps are of telescoping type and always occur over the purlins.
- (4) Side laps are of interlocking type with a complete rib to provide equal strength at all points.
- (5) Fully provides for expansion and contraction.
- (6) Methods of lapping prohibit the flow of asphalt to the interior of the building.
- (7) Welded or clipped in place to form a rigid yet self adjusting deck.
- (8) Forms a smooth, firm, inherently dry mopping surface for the application of insulation and waterproofing felts which are included in the Holorib Complete Roof Unit.
- (9) **Holorib Complete Roof Unit**—Is insulated to prevent condensation, thereby protecting the steel against corrosion.
- (10) Is light in weight, often reducing structural requirements. (One sq. ft. of Holorib, insulation and smooth surface waterproofing weighs approximately 5 lbs.)
- (11) Is quickly erected. Speeds completion of the building.
- (12) Can be laid in any weather men can work. Nothing to freeze, nothing to pour, nothing to dry out.
- (13) Applicable to flat, pitched, saw-tooth, monitor, bow-string or curved surfaces on all types of buildings.
- (14) Can be finished with slate or shingles or tile to provide architectural appearance.
- (15) Saves winter fuel. Provides cooler interiors in warm weather.
- (16) Saves insurance. Takes fireproof rating when used over buildings that house incombustible contents.
- (17) Compares favorably in cost with all other types of roof construction having equal advantages.
- (18) A long lived roof, requiring a minimum of maintenance.

The Holorib Complete Roof Unit

The Holorib Complete Roof Unit has as its base the famous Holorib Steel Roof Deck, superior to either concrete slabs or wood sheathing. Its triangular rib construction provides rigidity with the lightest possible weight thus reducing structural steel costs and offering a saving both in initial expense and subsequent maintenance.

Its middle stratum is composed of pressure resisting insulating sheets which prevent heat loss thus conserving fuel and providing protection from summer heat.



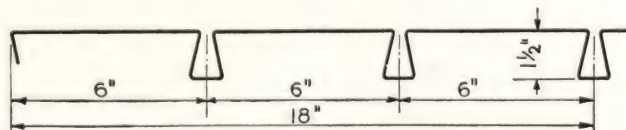
Its outer surface is long lived waterproofing designed for permanent protection against leakage.

These component parts: waterproofing, insulation and steel deck have a natural affinity, each for the others. They are bonded together and waterproofed by moppings of roofing asphalt and further secured by Holorib Expanding Nails. Thus united, they form a complete roof; permanent; proof against weather, fire or rot. Condensation on the under side is eliminated. Specified temperatures and humidities are easily maintained.

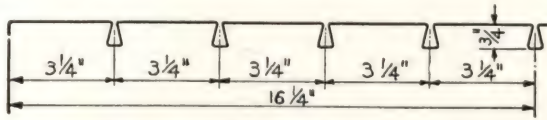
The Holorib Steel Roof Deck

Wide Span Holorib—Wide Span Holorib is made for standard roof deck construction in 18, 20 and 22 U. S. S. gauge steel sheets for spans of 4 ft. to 8 ft. 6 in. Effective covering width is 18 in. and sheets are furnished in proper lengths to make all end laps directly over purlins or rafters.

Each plate is so formed as to be reinforced by three self-contained triangular ribs extending longitudinally and spaced 6 in. apart. When the plates are erected, the broad flat bases of these ribs rest directly on the purlins and are secured to them either by welding or by clipping. Thus they provide maximum rigidity with minimum deflection under normal loads.



Narrow Span Holorib—Narrow Span Holorib is made in 24 U. S. S. gauge sheets for spans up to 4 ft. Effective covering is $16\frac{1}{4}$ in. and sheets are furnished in proper lengths to make all end laps directly over purlins or rafters.



Recommended Maximum Spans

Each plate is formed to contain five triangular reinforcing ribs extending longitudinally and spaced $3\frac{1}{4}$ ins. apart. When erected, the flat bases of these ribs rest directly on the purlins and are held by clipping. Due to the light gauge of this metal, it is difficult to weld it to the purlins satisfactorily.

Materials—Standard Holorib, both Wide Span and Narrow Span, is made either from copper-bearing or non-copper-bearing steel as specified. When the deck is properly insulated, condensation is prevented with a corresponding absence of corrosion regardless of the type of steel used. Non-copper-bearing steel can be used satisfactorily where economy is a factor.

(Where specified, copper bearing steel with from .20% to .25% copper will be supplied at slight extra cost.)

Painting—Holorib Sheets are given one dip coat of gray paint and thoroughly oven dried before shipment. One additional coat on the under side by the painting contractor is recommended after erection.

(Where processes within the building are of a nature to cause or require high temperatures or high humidities, consideration should be given to special paint as an additional factor of safety.)

End Laps and Side Laps

One end of each sheet is "crimped" so that it "telescopes" into the end of the adjoining sheet. This method of joining leaves all ribs complete with practically full strength and affords a real protection against dripping asphalt in case of fire on the roof and against igniting the roof in case of fire inside the building.

The standard length of this telescoping end lap is $2\frac{1}{2}$ ins. All end laps are made directly over purlins.

One lateral edge of each Holorib sheet is turned downward to form a "barge strip" (1 in. deep on Wide Span Holorib, $\frac{1}{2}$ in. deep on Narrow Span Holorib).

When erected, this barge strip nests or interlocks into the triangular rib of the adjacent sheet, forming an interlocking side lap which is tight, smooth and permanent but which allows the deck to conform to the movements of the material above it. Note that the outside rib of each sheet is complete, affording the same strength at all points of the deck. No side lap clips are necessary.

Laying and Attaching

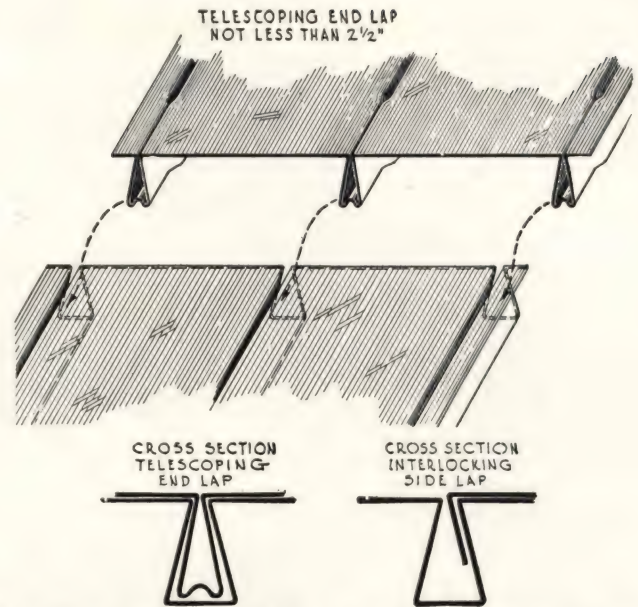
The erection of Holorib is simple and may be done by the General Contractor or the Roofing Contractor with the aid of complete installation instructions and a thoroughly engineered roof diagram furnished on every operation. If desired, DETROIT STEEL PRODUCTS COMPANY will furnish superintendence to aid the contractor or the Fenestra Construction Co., a subsidiary of DETROIT STEEL PRODUCTS COMPANY will undertake erection under a separate contract and assume full responsibility.

Where Wide Span Holorib is used and where facilities permit, the Holorib sheets may be welded directly to the purlins. This method of attachment is pretty well standardized on large operations and is increasingly popular on small operations (50 to 150 squares).

Where Narrow Span Holorib is used or where attachment of Wide Span Holorib by means of welding is not feasible, the standard method of attachment is by means of Holorib steel clips.

These clips are standardized and carried in stock to fit most of the commonly used structural steel members. They have been designed to make erection easy and "fool-proof" and to anchor the deck firmly in place with an ample factor of safety in holding power.

Insulation should be applied directly on the Holorib Deck, laid in broken joint construction, in a full mopping of hot asphalt. Around the perimeter of the roof area, metal fasteners should be used, spaced about 2 ft. apart and about 12 in.



back from the edge, to hold the roof intact against the ravages of wind.

On practically flat roofs, no other fastenings are necessary, but on steep surfaced roofs (pitches greater than 2 in. in 12 in.) additional fasteners should be used; the number depending on the pitch of the roof. A fair average is 25 nails per square.

For Wide Span Holorib on steep surfaces, special Holorib Expanding Nails and Washers are used. These are so designed that the nails may be driven through the insulation into the deck ribs and then, with a sharp blow, expanded within the ribs.

MAXIMUM SPAN RECOMMENDATIONS

Maximum recommended span	Gauge	Type of Holorib	Weight of deck per net square
4' 0"	No. 24	Narrow—Span	150 lbs.
5' 6"	No. 22	Wide—Span	200 lbs.
7' 0"	No. 20	Wide—Span	240 lbs.
8' 6"	No. 18	Wide—Span	320 lbs.

Note: The above Maximum Span Recommendations have been conservatively established after experience with many thousands of squares of Holorib Decks, keeping in mind that the satisfactory insulated roof unit must have a firm and rigid base. Building Codes in some metropolitan districts limit the gauge and spans for steel decks and we will be glad to furnish information on specific localities.

Sanacoustic Holorib

Sanacoustic Holorib, developed with the co-operation of Johns-Manville engineers, is a combination, in one unit, of a lightweight steel roof deck, with a sound absorbing facing which constitutes the ceiling of the interior, an efficient heat insulation and a waterproofing surface exposed to the weather.

It is applicable to theaters, auditoriums, gymnasiums, churches or factory offices, in fact, to nearly all buildings where suspended ceilings can be omitted.

The outstanding feature of Sanacoustic Holorib is the fact that it can be guaranteed to have 70% sound absorption at a frequency of 512 cycles.

It has a heat transmission of only .15 B.t.u.'s per hour, per square foot per degree difference in temperature.

It provides this high degree of sound quieting and heat stop value at a cost far below that of other similar materials of equal efficiency.

Naturally, it has all the advantages in roof construction common to the standard Holorib Deck.

Fenestra Holorib Floor Forms

Fenestra Holorib Steel Sheets, with their reinforcing ribs turned up, are highly desirable as permanent floor forms and reinforcement for concrete. They have been satisfactorily used in poured concrete floors, on balcony steps, mezzanines and galleries, arena seats, basement ceilings, stair wells, pipe ducts and trenches and oven sides and roofs.

Holorib forms become a permanent and slightly part of the construction and where plastered ceilings are not required, the smooth steel sheets form clean attractive ceilings at a real saving in cost.

THE R. C. MAHON COMPANY

Manufacturers of the Mahon Steel Roof Deck

DETROIT, MICH.

REPRESENTATIVES IN ALL PRINCIPAL CITIES

Product

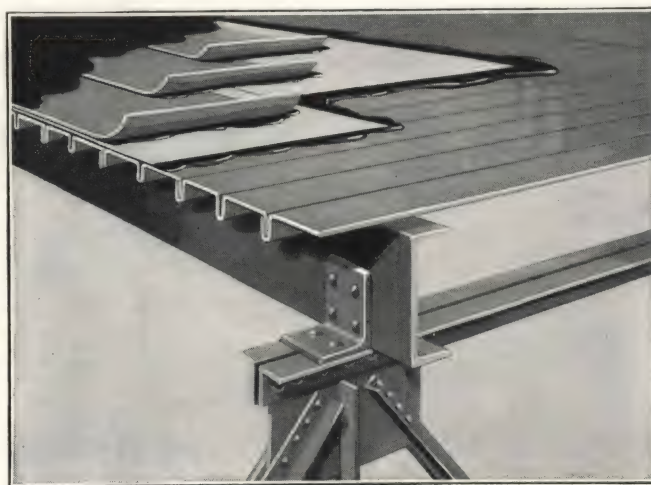
MAHON STEEL ROOF DECK.
For Mahon Acoustical Ceilings, Kalamein and Tin Clad Doors, Rolling Steel Doors and Cast Iron Roof Sumps, see File Index.

Mahon Steel Roof Deck for Every Type of Roof

The Mahon Steel Roof Deck, details of which are set forth in these pages, offers a roof suited to practically any type of building calling for either flat, pitched or arched roof construction. Mahon Deck Plates can be furnished curved to fit arched roofs—minimum radius 36 ft.

Architects and engineers will find that the Mahon Steel Roof Deck greatly simplifies roof design, and builders will appreciate the ease with which the roof can be applied. It has advantages in structural simplicity which permit rapid erection and consequently lower the cost of construction.

The laying of a Mahon Steel Roof Deck is one of the simplest operations that you have ever witnessed. The work, due to the ingenious design of parts, can proceed swiftly and is done entirely from the upper side of the roof. Every plate



Cross Section of Mahon Steel Roof Deck Showing Application of Insulation and Waterproofing

Material

Mahon Steel Roof Deck is furnished in 18 and 20-gauge, in special, tight-coated galvanized copper bearing steel and requires no painting or maintenance whatsoever. It can also be furnished in copper bearing steel painted if desired.

Mahon has established 20-gauge as a minimum for roof deck plates as a result of exhaustive tests which indicate this as the lightest material that can be safely and economically utilized. Weight impacts would be likely to seriously affect roofs of lighter gauge.

Standard Assembling Clips

The laying of a Mahon Steel Roof Deck requires only the installation of the steel clips by which the plates are fastened together as they are assembled, and by which they are fastened to the supporting structural steel. Mahon clips have been designed primarily for simplicity, and they have in every instance a strength more than adequate for the work

they are called upon to perform.

There is not in the design of the Mahon Steel Roof Deck any part which can work up, become loose or in any way act to rupture the insulation or roofing material.



Installing Mahon Steel Roof Deck on the Latrobe Electric Steel Co. Plant, Latrobe, Pa.

of a Mahon Steel Roof Deck interlocks with the preceding unit. There are no end fittings—the ends being lapped one over the other. All lap joints occur directly over purlins. All clips are installed from the top as the plates are put in place.

The Mahon Steel Roof Deck consists of one standard roof plate and three standard clips by which the plates are fastened together and to the supporting framework.



Mahon Standard Steel Roof Deck Plate

Intermediate Clip Locking Roof Deck Plates Together Mid-way Between Purlins



Flashing Clip for Attaching Flashing to Roof Deck Plates



Beam or Purlin Clip for Attaching Roof Deck Plates to Beam or Channel Purlins

An Integral Unit Roof

Mahon Steel Roof Deck when installed functions as a single steel plate, the separate units becoming an integral part of one interlocking whole when assembled. A feature of the Mahon Steel Roof Deck which makes for extra rigidity and strength is the location of all end lap joints directly over purlins. The minimum end lap is 2 in. No unsightly laps or joints are visible from the underside of the Mahon Deck.

All plates in the Mahon Deck lay 12 in. wide when installed, ribs 1½ in. deep are 6 in. on centers. Every second rib where the plates interlock provides three thicknesses of metal. Each deck plate is locked with special clips to the adjoining plate at intervals of approximately 2 ft. between purlins to prevent deflection of individual plates due to localized loading. This feature eliminates the possibility of loosening the bond between insulation or roofing material applied to the deck.

Universal Application

The unusual lightness of the Mahon Steel Roof Deck fits it for use on buildings of every type, including buildings with unusually long spans, such as auditoriums, gymnasiums, and the like. Designers will also



Mahon Steel Roof Deck Installed on the Robert Beyer Corporation's Plant, Brooklyn, N. Y.

find this type of roof deck admirably suited to factories, office buildings, hotels, apartments, hospitals, and schools.

The fact that a Mahon Steel Roof Deck can be insulated to exactly the degree required for the type of occupancy makes it an ideal construction for any type of building.

Expansion and Contraction

Expansion and contraction difficulties have been entirely obviated in the design of the Mahon Steel Roof Deck. Note in the center rib an ample allowance for lateral expansion and contraction, and also that longitudinal expansion and contraction of the plate is provided for in the lap joints.

These factors mean that bulging positively cannot occur in a Mahon Steel Roof Deck, and that no injury to insulation or composition roofing can occur through expansion or contraction.



Underside of Mahon Steel Roof Deck

Note the clean, even appearance and the absence of end joints

Monitor Flashings

The projecting ribs on the plates of the Mahon Steel Roof Deck can be cut and the sheet turned up to make flashings under monitor windows, curbs, etc.

Saddles

On many types of buildings, where Mahon Steel Roof Deck is employed, built-up saddles are unnecessary. Saddles may be created by warping the roof deck. This is accomplished by setting the purlins in the drainage section at the desired angle to produce ridges and valleys—usually an angle of ¼ in. to the foot is sufficient. No extra roof deck plates are required and it does not involve cutting or fitting. Saddles for either sloping or vertical face sawtooth buildings may be economically built from Mahon Steel Roof Deck plates cut to fit.



Mahon Steel Roof Deck Installed on the Hupmobile Plant, Detroit, Mich.

Note the deck-formed saddles adjacent to the parapet wall

This system of roof drainage has worked out very successfully on a number of installations where it was adaptable. To meet conditions where the aforementioned methods are not practical, saddles may be built from any material of a permanent nature—in which case we recommend the application first of a layer of asphalt or tarred felt on the steel deck proper, the same to be cemented to the deck with asphalt or pitch. This should be mopped on top with asphalt or pitch, over which the saddle fill may be installed.

Caution—We do not recommend cinders for saddle fill. However, if cinders are to be used, under no



Mahon Steel Roof Deck Installed on the Tennis Arena at the Brookline Country Club, Brookline, Mass.

consideration should this material be laid next to the steel deck. The sulphuric content of cinders is detrimental to steel, and for the protection of the deck we would recommend that at least two plies of roofing felt be laid with pitch or asphalt over areas of the deck to be covered with cinders.

Insulation

The Mahon Steel Roof Deck is a complete structural unit, and requires no insulation for stiffness or rigidity—these factors being amply provided for in the deck itself.

In the case of unheated structures, such as loading docks, warehouses and the like, insulation is not necessary.

In buildings that must be heated or where condensation is a problem we recommend the use of insulation of any approved type—amount of insulation will be governed by the type of occupancy.

Composition Roofing

Any standard composition roofing can be used over the Mahon Steel Roof Deck.

Asphalt roofing may be preferable from a standpoint of weight.

Sheets should be mopped solid similar to roof construction over concrete.

Fire Safety

No matter what type of occupancy a building is designed for, building codes in centers of population demand fire safety. Mahon Steel Roof Deck provides the utmost in fire safe roof construction, and will obtain for the owner a low insurance rate.

Engineering Data

Light Weight—

As indicated before, the weight of Mahon Steel Roof Deck is such that it permits considerable economies in construction. The Mahon 20-gauge deck weighs 2.5 lb. per sq. ft. and the 18-gauge deck weighs 3.25 lb. per sq. ft. The total weight of roof will depend on type and amount of insulation and type of roofing material used.

Deflection—

Load tests for deflection by the Perry Testing Laboratories, Detroit, Mich., on the Mahon Steel Roof Deck with live loads of 30 and 40 lb. per sq. ft. showed no permanent deflection in either 18 or 20-gauge deck.

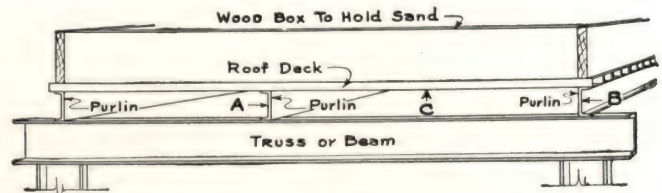


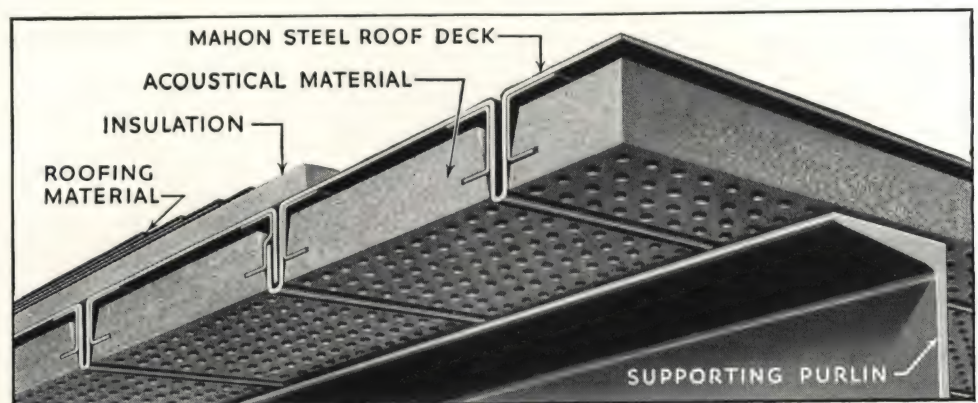
Diagram Illustrating Method of Testing Mahon Steel Roof Deck for Deflection

The method used in making these tests is clearly illustrated in diagram above. Purlin "A" in diagram is movable to test deflection at various purlin spacings.

Acoustical Treatment

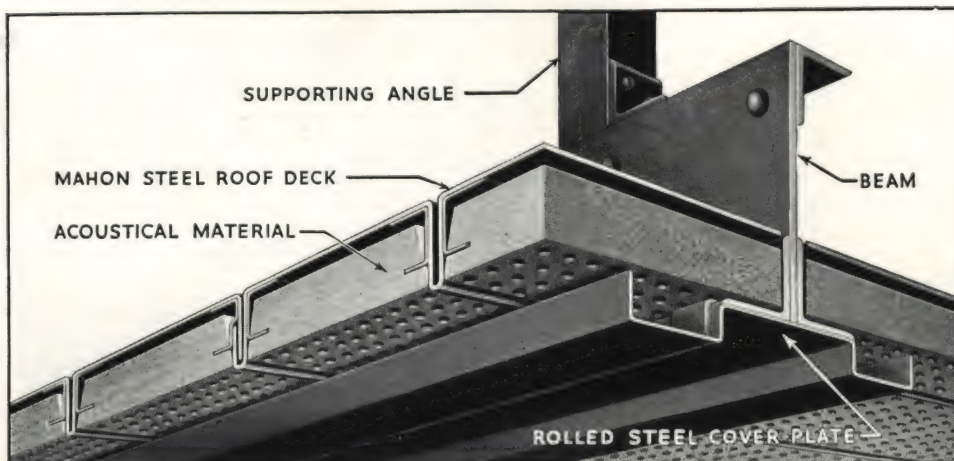
Mahon Steel Roof Deck can be finished with acoustical materials inserted between ribs. The material used can be furnished in various thicknesses up to $1\frac{1}{4}$ in., and is perforated to within $\frac{1}{8}$ in. of its entire thickness with $\frac{1}{4}$ -in. holes spaced $\frac{1}{2}$ in. center to center. The various thicknesses have sound-absorbing efficiencies of from 48% to 84%. This material can be painted if desired and provides an effective acoustically treated ceiling for auditoriums, drill halls, etc.

Mahon Steel Roof Deck, with the same acoustical material, is admirably suited for economical construction of suspended ceilings where acoustical treatment is desired.



Above:

Cross Section Showing Construction of Combination Mahon Steel Roof Deck and Acoustical Ceiling



Left:

Cross Section Showing Construction of a Suspended Acoustical Ceiling Supported by Mahon Steel Roof Deck

MILCOR STEEL COMPANY

MILWAUKEE, WIS.

CANTON, OHIO

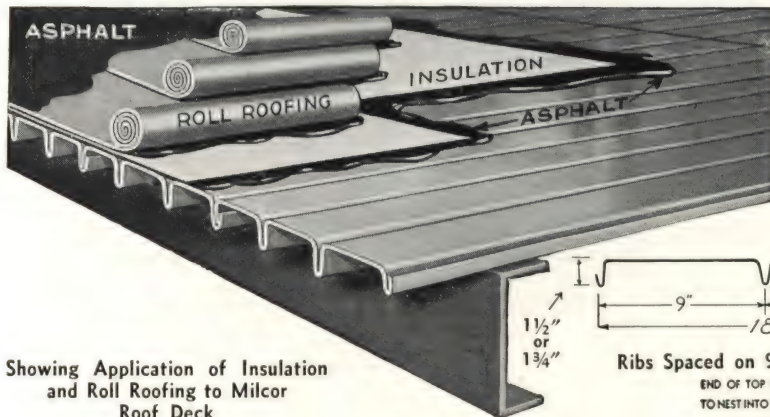
Send Inquiries to 4139 W. Burnham Street, Milwaukee, Wis.

PLANTS AT: MILWAUKEE, WIS.; CANTON, OHIO; CHICAGO, ILL.; KANSAS CITY, MO.; LA CROSSE, WIS.

SALES OFFICES IN PRINCIPAL CITIES

For Our Catalogues on Milcor Fireproof Products, Ventilators, Access Doors, Steel Ceilings and Skylights, see File Index

MILCOR STEEL ROOF DECK



Showing Application of Insulation and Roll Roofing to Milcor Roof Deck

Description—Milcor Roof Deck is furnished in lengths to take care of any spacing of purlins. The over-lapping ends and inter-locking sides insure speedy installation.

Milcor Roof Deck is formed with ribs $1\frac{1}{2}$ in. or $1\frac{3}{4}$ in. deep, spaced on 6-in. and 9-in. centers, and is furnished with 18-in. width of plate. The ribs are depressed at one end to permit easy nesting, where laps occur. Laps are always made directly over purlins, and are not less than 2 in. in length.

Materials—Fabricated from black annealed copper alloy, and tight-coat galvanized steel.

Installation—On installations where a close fit to side and end walls is required, we furnish an end plate which is installed as shown. This end plate is fastened to the adjoining roof deck plate with Kalon screws. On all installations the walls are flashed down over the decking. Purlins are placed, bridged and secured to their support as specified. The deck plates are then anchored to the purlins as shown. Roof insulation is applied as specified, and the roofing installed.

When submitting inquiries to us for estimate, stipulate gauge of decking wanted or spacing of purlins, and required live load, the net area of roof, length of end wall, and length of sidewall, also size, location, and spacing of supports. The required quantity of clips is furnished with each specification.

Also indicate whether roof is of single or double pitch construction and if roof deck plates are to project beyond outside wall line or if a parapet wall carries above roof deck level. The specific anchor requirements are determined when making the lay-out.

Engineering Service—We maintain an Engineering Department for your convenience in estimating. Send us roof plans and we will supply you with all details necessary.



Milcor Roof Deck Is Easy and Economical to Install

Ribs depressed at one end for perfect lap.
Depth of ribs— $1\frac{1}{2}$ or $1\frac{3}{4}$ in.
Spaced on 6 and 9-in. centers.
Width of plate—18 in.
Complete with necessary accessories.
Fabricated from black annealed copper alloy, and tight-coat galvanized steel.
In lengths to take care of any spacing of purlins.

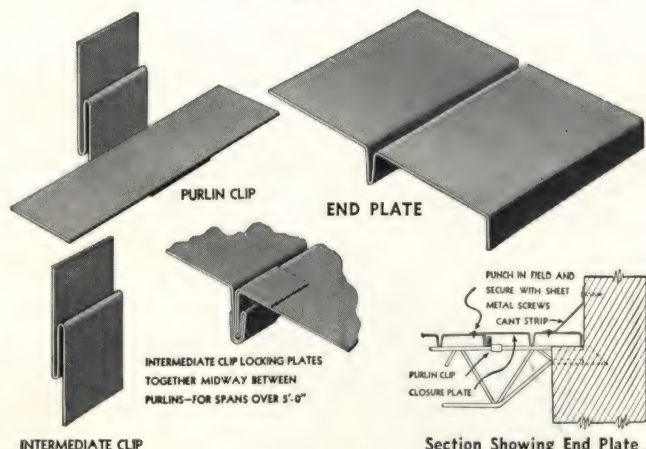
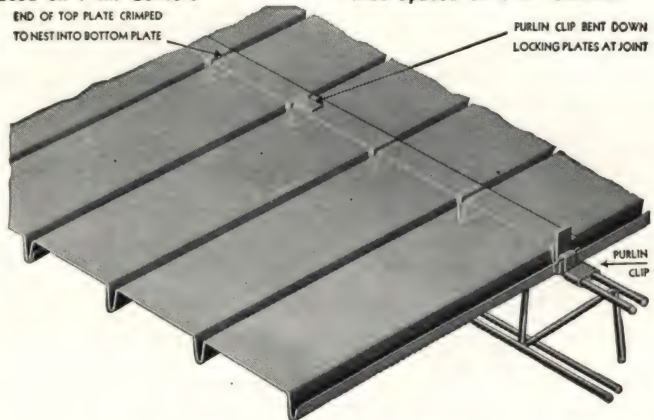
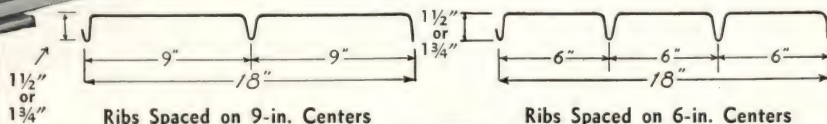


TABLE OF SAFE LOADS FOR MILCOR ROOF DECK
Total Safe Uniformly Distributed Loads in Pounds per Square Foot
Maximum deflection allowed is one two-hundred and fiftieth ($\frac{1}{250}$) of span in inches, based on a uniform load

Gauge	Spacing of Ribs, in.	Weight per 100 sq. ft.	Purlin Spacing, ft.-ins.									
			4-0	4-6	5-0	5-6	6-0	6-6	7-0	7-6	8-0	
	Ribs, ins.											
24	6	150 175 71	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	$1\frac{1}{2}$ $1\frac{3}{4}$	
22	6	180 210 79	62 80	50 65	41 53	35 45	30					
22	9	170 200 52	67 41	53 34	44 28	36						
20	6	215 250 95	75	62 80	50 65	42 55	36 47	31				
20	9	200 235 63	82 50	65 41	53 33	43 28	36					
18	6	285 330 125	100	81 67	87 56	73 48	62 41	53 36	31			
18	9	260 305 84	66	54 70	44 57	37 48	32 27	27 35				

THE UNIVERSAL METAL SECTIONS CO.

Manufacturers of Universal Steel Roof Deck

1740 East Twelfth Street Building, CLEVELAND, OHIO

Advantages

Universal Steel Roof Deck was designed by the originator and original patentee of insulated steel roof decking to combine *lower cost, greater rigidity and greater ease of installation* with the proved advantages of insulated steel roof decks for most types of roof construction.

Universal Steel Decks are—

1. Flexible—Variation in spacing of sections provides a means of carrying any normal roof load at any reasonable Purlin spacing. Purlins spaced at ten feet are entirely feasible. Any size hole may be cut in the deck without additional structural supports, or sections of deck may be given special strength.
2. Strong—The fixed continuous beam principle is used for both sections and top sheets. Purlins can safely be spaced wider without decreasing rigidity or roof strength.
3. Light weight—See Engineering Data for weight per square.
4. Simple to install—Complicated Engineering layouts are unnecessary.
5. Non-combustible—Fire Insurance rates are lower.
6. Waterproof—Regulation 10, 15, or 20 year bonded roofing is applied.
7. Heat Saving—Warmer in winter; cooler in summer.

Recommended For—

Gymnasiums	Clubs
Garages	Hotels
Stores	Factories
Schools	Apartments
Railroad Stations	Theaters

and wherever an inexpensive, non-combustible, long lasting roof is indicated. Particularly recommended for types of construction requiring long spans, such as gymnasiums.

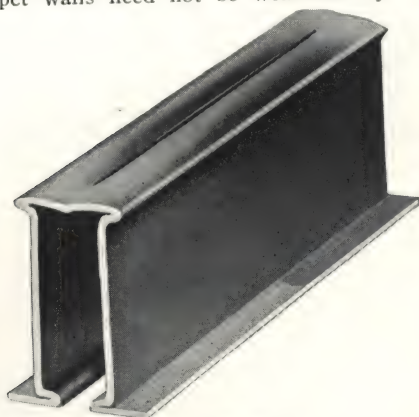
One of the best known and largest national engineering and contracting companies reports—"very satisfactory type of construction."

A large, nationally known roofing company reports—"Entirely satisfactory for application of roof insulation and built up roofing." (Originals on file.)

Other Information

Eave projections up to 2 ft. horizontal are feasible. Parapet walls need not be weakened by a rattle, and a corbel is unnecessary since Universal Sections may be inserted in holes in wall, etc.

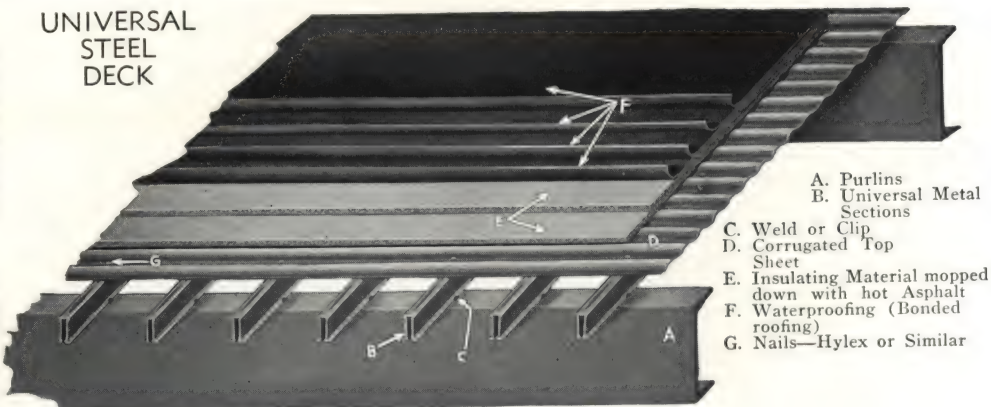
Acoustical treatment is simple—Any material may be fastened to the underside of the deck by use of the double nailing feature. One ply of insulation may be placed directly over the sections. This may be desirable for acoustical treatment or for a more pleasing architectural effect, although the effect of the steel underside of the roof is attractive.



Universal Sections

May be used wherever light, strong, low cost steel beams are desired. They are easily cut and handled on the job and can be nailed to on top and bottom. They are used for roofs, side walls, ceilings and partitions. Write for prices and complete information.

UNIVERSAL STEEL DECK



- A. Purlins
- B. Universal Metal Sections
- C. Weld or Clip
- D. Corrugated Top Sheet
- E. Insulating Material mopped down with hot Asphalt
- F. Waterproofing (Bonded roofing)
- G. Nails—Hylex or Similar

Description

Universal Steel Roof Deck consists of Universal Sections of copper bearing steel, acting as continuous supporting beams, welded or clipped to purlins, covered with 24 or 26 gauge, 1-in. corrugated copper bearing sheets. Insulation and waterproofing is applied on top of the sheets. Sections and sheets are dipped in Universal Rust-resisting paint, or may be furnished galvanized, if desired.

Sections are cold rolled from one piece of 16-gauge hot rolled copper bearing strip steel. They are 2 in. deep and 1½ in. wide over all.

Engineering Tests

Excerpts from the report of the James H. Herron Company Testing Laboratories, Cleveland, Ohio:

Test No. 1—"Deflections (under 40-lb. load per sq. ft.) on both 7' 6" spans (end spans) average .277", while that of 8' 0" spans (center spans) average only .112"—well within requirements."

Test No. 2—"A 6-ft. span supported on rollers, load at center—results:

I_{1-1} (Moment of inertia)—.2467 in. 4

This corresponds extremely close to the computed moment of inertia— $I_{1-1} = .24644$ in. 4."

(The section modulus is the same as the moment of inertia for this beam.)

Test No. 3—"10-ft. span—3 beam loading conditions—single span (both ends free to rise), end span of at least two continuous spans (one end restrained, one end free to rise), interior span (both ends restrained)—concentrated loads used—average deflections are .421 in., .389 in., and .347 in. respectively, which are within (the allowable of) $\frac{1}{250}$ of 10 ft. or .480 in."

(Complete Herron report will be sent on request.)

ENGINEERING DATA

Section Modulus .246
Roof Load: 40 lbs. per sq. ft., Moment of Inertia .246
16,000 lbs. f.s.

Purlin span in		Final span of continuous beams			Intermediate spans of continuous beams		
		WL 10			WL 12		
ft.	in.	No. of ft. of sect. per sq.	Section spacing in feet	Total wt. per sq.*	No. of ft. of sect. per sq.	Section spacing in feet	Total wt. per sq.*
5	0	40	2.500	144	40	2.500	144
5	6	40	2.500	144	40	2.500	144
6	0	50	2.000	157	40	2.500	144
6	6	60	1.667	171	50	2.000	157
7	0	60	1.667	171	50	2.000	157
7	6	70	1.428	184	60	1.667	171
8	0	80	1.250	198	70	1.428	184
8	6	100	1.000	226	80	1.250	198
9	0	100	1.000	226	90	1.111	212
9	6	110	0.909	240	100	1.000	226
10	0	130	0.769	267	110	0.909	240

*With 26-gauge top sheet weighing 88 lbs. per square. Add 21 lbs. to these weights if 24 gauge is required.

WATERPROOFING

- S E C T I O N -

4

CATALOGS 1 to 23

MEMORANDA

ADENSITE CO., INC.

Manufacturers of Concrete Waterproofings and Hardeners

152 West 42nd Street, NEW YORK, N. Y.

LABORATORY: 25-25 51st Avenue, LONG ISLAND CITY, N. Y.

Products

ADENSITE, Liquid Integral used in gauging water for Hardening and Waterproofing portland cement concrete and mortar.
PURTONE COLORS, mineral color in powder form for portland cement Floor Finish.

ADAFLINT, a flush-on Floor Hardener in crystal form.
CLERSEAL, a colorless Waterproofing.
STEARATE PASTE, an integral Waterproofing in paste form.

ADENSITE—A LIQUID INTEGRAL WATERPROOFER

Uses—Waterproofing concrete walls below grade, either in mass concrete or in plaster coat.

Hardening and dustproofing cement floor finish.

Waterproofing portland cement stucco. For brick masonry, Adensite gauged mortar is smooth working, does not drag and prevents "riding."

Authoritative Tests—Upon request, we shall be pleased to furnish the architect with authoritative test data on Adensite, compiled from testing laboratory results and research work carried out at the U. S. Bureau of Standards for the A. S. T. M.

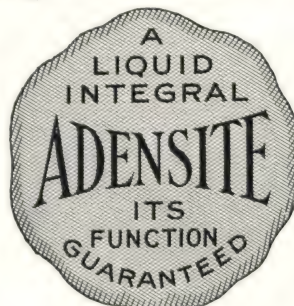
Guarantee—Adensite is unconditionally guaranteed to produce positive and permanent results by the manufacturers, the ADENSITE CO., INC. Surety maintenance bonds furnished on waterproofing jobs.

Service—Our field men visit construction operations while Adensite is in use.

Adensite Specifications

Waterproofing Mass Concrete—The gauging liquid for concrete shall be prepared by placing from 3 to 4 gal. of Adensite in a 52-gal. barrel and adding water or Adensite can be added direct to the water in mixer before letting in the dry mix. For every 1-bag batch, use between 3 and 4 gal. of the prepared liquid (amount of liquid varies with fineness of aggregate and temperature).

Joints Between Pourings—Shall be thoroughly grouted with Adensite grout.



TRADE-MARK



Independence Hall, Philadelphia
Waterproofed with Adensite gauged plaster coat

Waterproof Plaster Coatings—Shall be $\frac{5}{8}$ in. in thickness, applied in 2 coats and properly coved and bonded to the floor.

Bonding New to Old Concrete—All surfaces before application of new work shall be thoroughly roughed, cleaned and dampened with Adensite grout to insure perfect bond.

Adensite Grout—Add 1 part Adensite to 3 parts water and enough cement to give mixture a creamy consistency.

Protection of Green Work—To protect green work against action of water, the pump shall be kept in operation 24 hours after pouring or troweling of work.

Floor Hardening—Upon the plain concrete floor slab shall be laid a 1-in. topping of 1 part cement and 2 parts clean sand.

This dry mix shall be tempered with a liquid composed of 3 gal. of water to 1 qt. of Adensite for every 1-bag batch. No dryer shall be used.

Gauging Liquid for Floor Finish—Gauging liquid may be prepared by putting 4 gal. of Adensite into a 52-gal. barrel and adding water (no stirring required).

Bond—When slab is over 48 hours old, before topping is stretched, it shall be given a coating of Adensite grout.

When slab is over 7 days old, before topping is stretched, it shall be roughed with a pick or chisel, cleaned and given a coat of Adensite grout.

Brick Masonry—The mortar shall be composed of 1 part portland cement, and 3 parts clean sand, tempered with a liquid composed of 1 part Adensite to 12 parts water.

Shipments

Adensite is shipped in 5, 30 and 50-gal. containers.

PurTone Color is shipped in 550-lb. barrels.

Adaflint is shipped in 2-lb. boxes, 25 to a case.

Clerseal is shipped in 1-gal. jugs; 5, 30 and 50-gal. barrels.

Some Users of Adensite

Grosvenor Atterbury, New York, N. Y.
Alfred C. Bosson, New York, N. Y.
Harold B. Brady, Elizabeth, N. J.
Bureau of Yards & Docks, Washington, D. C.
Clinton & Russell, New York, N. Y.
George W. Conable, New York, N. Y.
Day & Klauder, Philadelphia, Pa.
Delano & Aldrich, New York, N. Y.
Dennison & Hiron, New York, N. Y.
I. E. Ditmars, New York, N. Y.
C. E. C. Dyson, Toronto, Ont., Canada
J. H. & W. C. Ely, Newark, N. J.

J. W. Ferguson Co., Paterson, N. J.
Fletcher-Thompson Co., Inc., Bridgeport, Conn.
D. R. Franklin, Toronto, Ont., Canada
John F. Jackson, New York, N. Y.
Mack & Sahn, Wilkes-Barre, Pa.
John Molitor, City Architect, Philadelphia, Pa.
New York Central Railroad Co., New York, N. Y.
John T. Rowland, Jr., Jersey City, N. J.
F. B. & A. Ware, New York, N. Y.
Warren & Wetmore, New York, N. Y.
F. W. Wentworth, Paterson, N. J.

PurTone Colors for Cement Floors

PurTone colors are specially prepared for use with portland cement in floor finish and are used integrally throughout entire top finish, assuring permanent and positive results. Specifications on request.

Adaflint—An Applied Hardener for Cement Floors

Adaflint, dissolved in water, 2 lb. to the gallon and slushed

over an old or new floor, will render a cement finish hard and dustless. Furnished in natural gray, oak and green.

Clerseal—Colorless Waterproofing for Masonry Above Grade

Clerseal can be applied with brush or spray. One gallon is sufficient for 200 to 300 sq. ft. of surface in one application.

ANTI-HYDRO WATERPROOFING CO.

TELEPHONE
Blgelow 3-5440

295 Badger Avenue, NEWARK, N. J.

ESTABLISHED 1904

REPRESENTATIVES, SERVICE AND STOCK IN ALL LARGE CITIES

ANTI-HYDRO OF CANADA LTD., 5585 Delorimier Avenue, W., MONTREAL, CANADA

Products and Services

"ANTI-HYDRO," a Liquid Integral Compound for *Waterproofing, Dampproofing, Accelerating, Strengthening, and Hardening* all Portland Cement mixtures; producing *Durable Concrete*.

ARMORTOP, a penetrating liquid applied *Hardener and Dust Preventer* for *Cement Floor Surfaces*.

AMURSEAL, a black liquid *Dampproofing* applied to exterior of *Foundation Walls and Footings*.

ARIDTITE, a black liquid *Dampproofing and Plaster Bond coat* for interior of *Walls above Grade*.

ARIDCLEAR, a transparent liquid *Dampproofing* for *Stone, Brick, Stucco or Cement Walls above Grade*.

ACCELLO, a water solution of calcium chloride for *Accelerating the Set of Concrete in Cold Weather* and *Preventing Freezing*.

ADMIXTURE, a finely divided silica admix, used to increase plasticity and durability of concrete.

CALKING COMPOUNDS—*Plastic Material for Knife or Gun Application*: made in black or gray and shipped in 1-gal., 5-gal., 30-gal. and 55-gal. containers. It adheres perfectly to all construction materials.

CONSULTING WATERPROOFING ENGINEERS for consultation and design for all waterproofing constructions.

25-Year Guarantee

Written guarantees to maintain waterproof concrete for 25 years have been furnished on many important installations. Also dustproof and hardened concrete floors have been guaranteed for 5 years. A surety bond will be furnished on all waterproof installations supervised by Anti-Hydro Engineering Department.

"ANTI-HYDRO" INTEGRAL WATERPROOFING AND HARDENER

Description—"Anti-Hydro" is a liquid compound, reacting chemically with portland cement. There are no alums, hydrate of lime, greases, oils, stearic acid, iron admixtures or decomposable ingredients. "Anti-Hydro" causes cement to hydrate to a far greater percentage than with water alone and speeds the hardening of the cement. The result is dense, hard waterproof cement masonry of increased compressive and tensile strength, impervious to water, moisture, frosts, oils, sugar solutions, alkalis, sea water and remarkable resistant to acid action.

Tests—Reports of comparative tests made at the following laboratories are available:

California Institute of Technology; Case School of Applied Science; Columbia University; E. L. Conwell & Co.; Georgia School of Technology; David Kirkaldy Laboratories, London, England; H. C. Nutting Co.; Pittsburgh Testing Laboratories; U. S. Bureau of Standards; University of Michigan.



Functions of "Anti-Hydro"—

- (1) *Waterproofs* concrete and cement products.
- (2) *Increases the plasticity and workability* of concrete and cement mortars.
- (3) *Produces durable concrete, permanent* against water and weather.
- (4) *Increases and speeds compressive and tensile strength* of cement mortars and concrete, with *increased ultimate strength*.
- (5) *Hardens and dustproofs* cement mortars and floor toppings.
- (6) *Prevents corrosion* of steel reinforcing.
- (7) *Protects concrete against freezing*, during and after placement.

"Anti-Hydro" Specifications

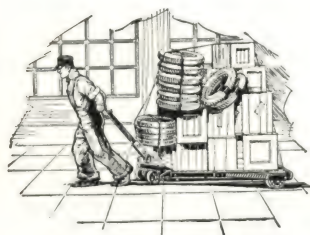
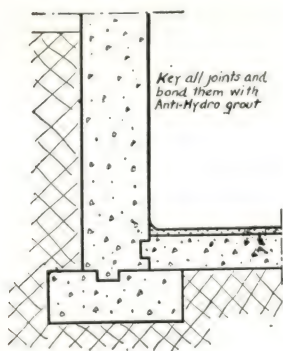
Waterproofing Mass Concrete—For 1:2:4 concrete not over 5½ gals. of water per bag of cement shall be used for gauging and 1 qt. of "Anti-Hydro" shall be added to the mixture with or immediately after the water. Not less than 1½ gals. of "Anti-Hydro" shall be used per cubic yard of concrete. Concrete shall be well spaded when placed in forms. All surface and ground water must be pumped or drained away from the forms during pouring and for 24 hours thereafter. All joints shall be keyed and bonded with "Anti-Hydro" grout. (See bonding directions following.)

Floor Hardening and Waterproofing—Cement floor toppings of 1:2 mix shall be of 1-in. thickness and shall be hardened and waterproofed by the addition of 1 gal. "Anti-Hydro" per barrel (4 bags) of cement. Proper consistency of the mortar will be obtained by gauging the mixture with not over 3½ gals. of water per bag of cement and 1 qt. of "Anti-Hydro" added with or immediately after the water. This procedure insures the double purpose of hardening and waterproofing cement surfaces exposed to wear. The topping shall be bonded to underlying masonry according to bonding directions following:

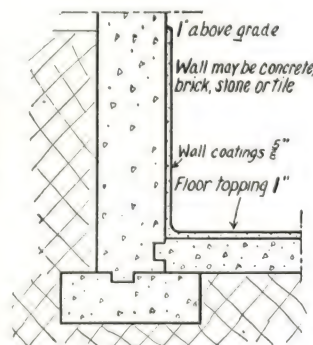
Waterproofing Wall Coatings—Wall coatings of cement plaster shall be of 1:2 mix and gauged by the addition to the water of 1 gal. of "Anti-Hydro" per barrel (4 bags) of cement. They shall be applied in 2 coats (scratch and finish), shall be ¾ in. thick above the floor level to at least 1 ft. above grade, and shall be coved at base and bonded to the floor and underlying masonry.

Waterproofing Brick Mortar—Cement mortar for use with brick, block or stone shall be of 1:3 mix, gauged and tempered with a solution of 1 volume of "Anti-Hydro" in 15 volumes of water. The mortar is waterproofed by this addition.

For complete waterproofing of brick walls, the same mortar shall be placed between the face brick and back-up masonry.



Hardens and Dustproofs Concrete Floors



Dampproofs Brick Mortar and Reduces Efflorescence

Calking Leaks Under Pressure—"Anti-Hydro," undiluted, can be added to *fresh* portland cement to the consistency of a thick paste, for plugging leaks against water pressure in any concrete or masonry work. Special instructions on request.

Bonding Old and New Concrete—To assure perfect bond to underlying masonry, all old surfaces shall be roughened thoroughly, cleaned, dampened and grouted. The grout shall be made by stirring $\frac{1}{2}$ to $\frac{3}{4}$ bag of portland cement gradually into a solution of 1 gal. of "Anti-Hydro" in 3 gals. of water until a thick, creamy consistency is obtained. After applying this grout to the prepared surface, the concrete or mortar shall be placed while the grout is still wet.

Note: Other specifications for waterproofing furnished on request: Cast Stone, Stucco, Dampproof Paint, Road Work, Acid Resistance.

"ANTI-HYDRO" QUANTITIES

Kind of work	Quantity Anti-Hydro per bbl. cement	Covering capacity
Waterproofing in mass 1:2:4 concrete	1 gal.	$\frac{3}{4}$ cu. yd. concrete
Waterproofing $\frac{5}{8}$ -in. plaster coat	1 gal.	100 to 125 sq. ft.
Waterproofing 1-in. floor topping	1 gal.	100 to 80 sq. ft.
Waterproofing stucco $\frac{3}{4}$ in.	1 gal.	100 sq. ft.
Waterproofing brickwork $\frac{3}{4}$ -in. joint 1:2	1 gal.	700 brick or 35 cu. ft.
Dampproofing brickwork $\frac{3}{4}$ -in. joint 1:3	1 gal.	1000 brick or 50 cu. ft.
Dampproofing in cement wash	8 gal.	2400 sq. ft.—2 coats
Dampproofing in $\frac{3}{8}$ in. cement plaster	1 gal.	150 sq. ft.
Hardening cement floor 1-in. topping	1 gal.	100 to 80 sq. ft.

How Shipped—"Anti-Hydro" is shipped in standard containers of 5 gal., 20 gal., and 30 gal.

OTHER "ANTI-HYDRO" PRODUCTS**Aridclear Dampproofs Exterior Masonry**

Aridclear, a transparent dampproofing, prevents the penetration of driving rains into exposed masonry of brick, stone, block, stucco, or cement. One gallon dampproofs from 70 to 120 sq. ft.

Specifications—Remove loose mortar. Point up joints with cement and sand mortar waterproofed with Anti-Hydro. To the clean, dry masonry apply two saturating coats of Aridclear with brush or spray. Allow at least 12 hours between coats.

How Shipped—Aridclear is shipped in 1-gal., 5-gal., 30-gal. and 50-gal. containers.

Armortop, Applied Hardener and Dustproofer for Concrete

Description—Armortop is a liquid compound, which, applied to new or old concrete surfaces, changes soft granular topping into a granite-like mass that resists most severe wear and abrasion without dusting.

It saves tearing up and relaying old floors beginning to rut. The complete transformation can be accomplished in the evening after closing hours, by unskilled labor.

Armortop penetrates into the concrete and reacts chemically with the cement, binding the loose disintegrating particles of the concrete mix into a dense, hard mass, with permanent results. Armortop

should not be confused with temporary paint coatings.

The covering capacity of Armortop varies with the density of the floor. One gallon will harden from 70 to 150 sq. ft. of floor surface.

A concrete test slab showing the results of Armortop treatment will be sent on request.

Specifications—Upon the clean, dry floor apply a solution of 1 part Armortop and 1 part water in 2 or more coats, depending upon the density of the floor. Allow 4 hours to elapse between applications.

How Shipped—Armortop is shipped in containers of 5 gal., 30 gal. and 50 gal.

Detailed Information

Write for complete data and specifications for any work within the scope of "Anti-Hydro" products.

The Services of Our Engineers Are Available at All Times

Amurseal Dampproofing

Amurseal, a black liquid asphaltic dampproofing, may be applied cold with spray or brush to the exterior of foundation walls or exposed concrete. Two coats give a solid, elastic film. Covering capacity approximately 80 sq. ft. per gallon, single coat; 50 sq. ft. per gallon, two coats.

How Shipped—Amurseal is shipped in drums of 5 gal., 30 gal. and 55 gal.

Aridtite Dampproofing and Plaster Bond

A black liquid asphaltic dampproofing and plaster bond applied cold to the inside surface of exterior walls in a single coat. Aridite provides a perfect bond for plaster and assures a lasting job. It prevents moisture passing through the walls and thus eliminates stains and discolorations on plaster. Also used for coating unexposed sides of cut stone. Covering capacity, approximately 80 sq. ft. per gallon, single coat.

How Shipped—Aridtite is shipped in drums of 5 gal., 30 gal. and 55 gal.

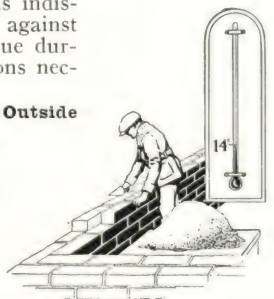
Accello, Concrete Accelerator and Anti-Freeze

Description—Accello, a standardized solution of calcium chloride, uniform in quality and strength, is used to accelerate the set of cement in concrete, mortar and floor finish in very cold weather, and to prevent freezing of portland cement mixtures at temperatures as low as 14° F. In plain concrete, cement plaster, floor toppings, brick mortar and road work, the use of Accello during the winter months, when the temperature falls as low as 14° F., is indispensable. It insures masonry work against freezing and permits work to continue during the cold weather. The proportions necessary are shown below:

Proportions Accello and Water at Outside Air Temperatures—

35° F., 1 part Accello to 20 parts water.
32° F., 1 part Accello to 15 parts water.
28° F., 1 part Accello to 12 parts water.
25° F. (or less), 1 part Accello to 10 parts water.
14° F. (or less), mechanical heat is necessary.

How Shipped—Accello is shipped in 50-gal. barrels and 5-gal. drums.

**Dealers Everywhere Carry Stock**

A complete stock of "Anti-Hydro" products is carried by dealers throughout the country.

AQUABAR WATERPROOFING PRODUCTS, Inc.

Waterproofings, Dampproofings, Floor Hardeners, Technical Paints

"Known the World Over"

GENERAL OFFICES

Perry Building, PHILADELPHIA, PA.

Representatives in All Principal Cities—Nearest Dealers Name Furnished on Request

AQUABAR INTEGRAL COMPOUND No. 1 WATERPROOFING PASTE.
AQUABAR AQUATITE INTEGRAL LIQUID WATERPROOFING.
AQUABAR CONCENTRATED INTEGRAL WATERPROOFING POWDER.
AQUABAR MORTARON MORTARPROOFING.
AQUABAR CLEAR COAT No. 2 COLORLESS WATERPROOFING LIQUID.
AQUABAR FERROCON METALLIC WATERPROOFING.
AQUABAR STATITE PLASTER BOND No. 3 DAMPPROOFING PAINT.
AQUABAR MARINE CEMENT No. 3A.
AQUABAR STONE BACKING No. 3B.
AQUABAR MASTIC INSULITE CEMENT No. 4.
AQUABAR SEMI MASTIC.
AQUABAR EMULSIFIED ASPHALT.

Products



AQUABAR IRON-CLAD CRYSTALS No. 7B FLOOR HARDENER.
AQUABAR DURO-MIX INTEGRAL LIQUID FLOOR HARDENER.
AQUABAR DUROCON METALLIC HARDENER.
AQUABAR QUICK-SET ANTI-FREEZE and ACCELERATOR.
AQUABAR FLOORTEX WOOD FLOOR PRESERVATIVE.
AQUABAR WAL-WITE FLAT and ENAMEL (Mill White).
AQUABAR CONCO CEMENT FLOOR PAINT.
AQUABAR CEMENTEX CEMENT PAINT.
AQUABAR ROOF COATING No. 5.
AQUABAR FABRICATORS RED OXIDE, CARBONITE STEEL COATING (Structural Steel Coatings).
AQUABAR ELASTICOTE No. 6 WATERPROOFING PAINT.
AQUABAR AQUATEX CAULKING COMPOUND.
AQUABAR IRONCO BONDING and POINTING POWDERED IRON.
AQUABAR GLASTEX FLOOR WAX.

Thirty-five Years of Quality and Service, 1901-1936

Over a quarter of a century resistance to storm, sleet and rain, as well as torrid suns, is the test to which AQUABAR PRODUCTS have successfully been subjected. The methods described are the development of the best practice known to waterproofing engineering and cover practically every field encountered in building construction and maintenance. Each product is the result of many years' careful research, and is added to the AQUABAR line only after the most exhaustive tests have shown each to be the most efficient in its respective field.

Detailed architects' specifications and information on any of our products will be furnished upon request, without obligation.

Integral Waterproofings

Integral Compound No. 1—A soft semi-paste which is easily dissolved in water for waterproofing foundation walls, floors, roof slabs, and all other forms of plain and reinforced concrete where absolute watertightness is essential. Increases the workability of the concrete or mortar but does not affect the strength. Brick mortar waterproofed with Integral Compound No. 1 prevents efflorescence and discoloration on brickwork caused by salts being brought to the surface by moisture, evaporation through the unprotected joints. Specify this material for all cement and lime mortars or patent masonry cements.

Specifications for Waterproofing Mass Concrete—A dry mixture of cement, sand and stone 1:2:4 mix, shall be tempered to a medium wet consistency with water to which 1 part of AQUABAR Integral Compound No. 1 has been added to every 50 parts of water in strict accordance with manufacturer's directions.

Machine Mix—Figuring on $\frac{1}{2}$ gal. basis, add $\frac{3}{8}$ pt. to each bag cement for mass concrete 1:2:4 mix.

Covering Capacity—Use approximately $\frac{1}{2}$ gal. to every yard mass concrete 1:2:4 mix for ordinary moisture conditions; where water pressure exists, use $\frac{3}{8}$ to 1 gal. per cu. yd.

Specifications for Waterproofing Cement Mortar and Stucco—The waterproofed cement mortar, consisting of 1 part cement, 2 parts sand with water shall be prepared by tempering to the required consistency, to which 1 part of Integral Compound No. 1 has been added to every 25 parts water, in strict accordance with manufacturer's directions.

Covering Capacity—Approximately 1 gal. will waterproof 150 to 225 sq. ft. stucco (depending upon wetness of mix) $\frac{3}{4}$ in. plaster coat.

Mortar Mortarproofing—The addition of Mortarlon to masonry mortars reduces shrinkage, adds plasticity, increases ad-

herence, retains mortar strength, and prevents efflorescence and discoloration on brick, stone work, and masonry walls of all character.

Specifications—Mortar for brick, tile, stone, etc., shall be proportioned 1 part cement, 1 part lime, 5 parts sand (or other mixes as specified) with the addition of AQUABAR Mortarlon Mortarproofing. Add 1 qt. per bag cement in strict accordance with the manufacturer's directions.

Covering Capacity—1 gal. will mortarproof sufficient mortar to set up 1,000 brick.

Waterproofings

Clear Coat No. 2 Colorless Waterproofing—Colorless transparent liquid for waterproofing, preserving, stainproofing exterior masonry walls above grade, cement, brick, stone masonry, limestone concrete, stucco, terra cotta, etc. Does not change the appearance of the coat surface, nor leave a film upon application. Penetrates, filling all pores, rendering surface impervious to moisture and driving rains, permanently.

Covering Capacity—Approximately 125 sq. ft. per gal. 1 coat, 80 sq. ft. 2 coats, depending upon porosity.

Ferrocon Metallic Waterproofing—Iron method for waterproofing concrete, brick and similar surfaces on interior against pressure. Finely powdered iron mixed with sand, cement and water, and applied with brush to the inside surface of the foundation to waterproof against absorption of moisture and seepage of water. For use on old and new structures. Five coats recommended for pressure. Detailed specifications furnished upon request.

Covering Capacity—Approximately 10 to 15 lbs. per 100 sq. ft. depending upon porosity.

Statite Plaster Bond No. 3—A black compound for application to masonry wall surfaces of all kinds, so as to form a dampproofing and bond for plaster (not portland cement mortar). It eliminates furring and lathing. Apply by brush or spray. *Note: do not use for concrete walls or ceilings.*

Covering Capacity—Approximately 75 sq. ft. 1 gal. 1 coat; 50 sq. ft. 2 coats.

Marine Cement No. 3A—A black compound of heavy consistency for dampproofing exterior foundation walls below grade, also for application to floor slabs of ground floors. Applied cold with brush or spray.

Covering Capacity—Approximately 60 sq. ft. per gal. 1 coat; 40 sq. ft. 2 coats.

Stone Backing No. 3B—A black compound for dampproofing unexposed surfaces of cut stone and for rustproofing metal surfaces. It is applied just as it comes from the container.

Covering Capacity—Approximately 125 sq. ft. per gal. 1 coat; 75 sq. ft. 2 coats.



Y. W. C. A. Building, Atlantic City, N. J.

S. V. MATHIS, Architect
Entire sub-structure and swimming pool waterproofed with Integral Compound No. 1. Brick mortar waterproofed and mortarproofed with Mortarlon. Interior walls dampproofed with Statite No. 3.

P. G. HANNUM, Contractor

Mastic Insulite Cement No. 4—A black mastic for waterproofing foundations, walls, tunnels, etc., against heavy water pressure; for overcoating, caulking and patching old roofs, ceiling cracks, open joints, etc. Applied cold (with trowel) $\frac{1}{8}$ to $\frac{1}{4}$ in. thick according to the smoothness of the surface. When set, it has the consistency of hard rubber, never gets brittle, and is unaffected by changes in temperature. Very elastic and adhesive; works freely.

Covering Capacity—Approximately 25 to 30 sq. ft. per gal. 1 trowel coat.

Semi-Mastic—A heavy bodied bituminous coating containing long staple asbestos fibre to produce a brush coating of definite thickness. For the dampproofing of masonry walls and floors above and below grade. Can be used on all masonry surfaces, but not concrete, nor can it be applied to ceilings.

Covering Capacity—Approximately 30 sq. ft. per gal. on corrugated hollow tile 1 coat.

Emulsified Asphalt—Pure unadulterated asphalt scientifically emulsified so that it may be used cold and without heating when mixed with aggregate for repairing cement floors, all roads and by itself as a bonding and waterproofing agent.

Covering Capacity—Approximately 75 sq. ft. per gal. 1 coat; 50 sq. ft. 2 coats.

Floor Hardeners

Iron-Clad Crystals No. 7B (Surface Treatment)—These crystals are dissolved in water, and applied to the concrete surface with a stiff brush or broom in two coats of equal strength for wearproofing, waterproofing and dustproofing of same.

Covering Capacity—Approximately 2 lbs. will treat 100 sq. ft. surface 2 coats.

Duro-Mix Liquid Floor Hardener—A liquid added to water used in mixing cement top coat for wearproofing, waterproofing and dustproofing light duty and commercial floors. Adds to plasticity and density, increases strength and resistance to wear.

Specifications—1 gal. to each 100 sq. ft. top coat 1:2 mix, or add 1 qt. per bag cement.

Durocon Metallic Floor Hardener—A specially prepared super-metallic hardener for industrial and heavy duty concrete floors. Contains Ocon which provides concrete of increased strength resisting acid, alkali, etc. Gives additional plasticity and workability to floor topping. Furnished in gray, red, green or brown. Also non-slip. Detailed specifications upon request.

Quick-Set Anti-freeze and Accelerator

This liquid is added to the water used in mixing mass concrete cement mortar, etc., for accelerating the set so as to prevent freezing. Causes a rapid evaporation of the water, and speeds the final set, permitting work to continue in temperatures as low as 20° F.

Floortex Wood Floor Preservative

A translucent liquid for preserving and dustproofing maple and yellow pine floors, without changing the appearance of the surface. It prevents rotting and decay, and adds to the wood those essential elements for preserving its life and appearance.

Covering Capacity—Approximately 250 sq. ft. per gal. 1 coat; 350 sq. ft. 2 coats, depending upon porosity.



Hotel Breakers, Palm Beach, Fla.

After exhaustive tests Aquabar CLEAR COAT No. 2 Colorless Waterproofing Liquid was selected to waterproof exterior walls of entire structure against hurricane, driving rains, high winds, etc.

Applied by METAL PRODUCTS CO. OF MIAMI, FLA., INC.

ter; is extremely durable, and resists wear to a remarkable degree. Made in light gray, lead, olive green, red, brown and rust.

Covering Capacity—Approximately 250 sq. ft. per gal. 1 coat; 150 sq. ft. 2 coats.

Cementex Cement Paint—Cement paint in powder form for use over concrete, stucco and other virgin masonry surfaces, outside or inside. Adheres firmly—giving a waterproof decorative and lasting finish. Excellent for swimming pools, laundries, interior or exterior wet or dry surfaces. Made in various colors.

Covering Capacity—9 lbs. and 3 qts. water will make 1 gal. which covers approximately 100 sq. ft. 2 coats.

Roof Coating No. 5—A pure Trinidad asphaltum product having remarkable adhesive and saturating properties for overcoating and waterproofing roofs of every description. It is applied cold with a brush.

Covering Capacity—Approximately 100 sq. ft. per gal. 1 coat.

Fabricators Red Oxide—A high quality linseed oil oxide product for use on iron and steel, shop coat. Remains in suspension, has large covering capacity and flows easily beneath the brush.

Steel Coating—Protective steel paint for field coat of exposed structural steel. Formulated to meet the most advanced theories and principles of the protection of iron and steel against corrosion.

Elasticote No. 6 Waterproof Paint—A highly specialized liquid cement coating for waterproofing and dampproofing exterior and interior concrete, brick, cinder block, stucco, plaster and masonry walls. Gives a handsome appearance and offers excellent wearing qualities. Made in various colors. Recommended for swimming pools.

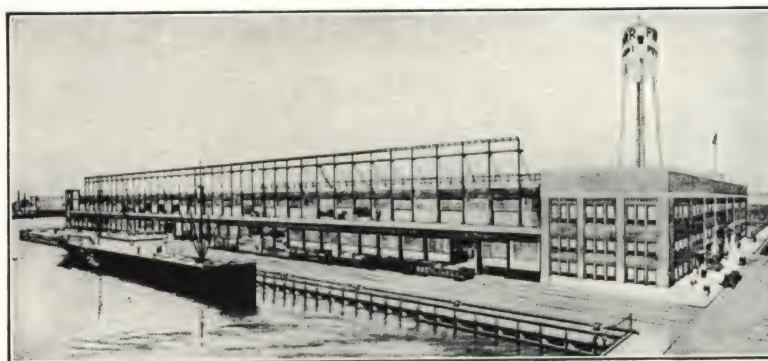
Aquatex Caulking Compound

For the caulking of window and door frames, pointing masonry and terra cotta joints and flashings of all kinds. A plastic material composed of weatherproof, waterproof and elastic bonding oils and gums, properly reinforced to permanently fill interstices and will remain elastic and unaffected by the weather. Absolutely stainproof. Made in gun or knife consistency in all colors.

Ironco Bonding Iron

For bonding top finish and hardening concrete slab, patching and resurfacing old concrete floors, correcting concrete disintegration and surface spalling, interior and exterior, honeycombs and grouting bridge seats, rails, etc. Gives increased strength to concrete and resistance to abrasion and corrosive agents.

Will not shrink.



Import Pier No. 1, Pennsylvania R. R., Canton, Baltimore, Md.

A. R. WILSON, Engineer of Bridges (P. R. R.) SINCLAIR & GRIGG, Contractors
Nearly half million square feet of Durocon-built floors

THE BILLINGS-CHAPIN CO.

Manufacturers of Damp-proof Coatings, Paints, Varnishes, Stains and Enamels

MAIN OFFICE AND FACTORIES

1163 East 40th Street, CLEVELAND, OHIO

NEW YORK BRANCH, 438 Pearl Street

BOSTON BRANCH, 7 Elkins Street

A LEADER IN DAMP-PROOFING AND STAIN-PROOFING

For over twenty-five years, Driwal has been the recognized leader in damp-proofing and stain-proofing materials. Specified by prominent architects and used on important buildings, it has always given the most thoroughly satisfactory results. Driwal becomes effective by penetrating into the pores of the material

Driwal

TRADE-MARK

and lining them with an insoluble substance which makes them fully water repellent.

Driwal is made in four varieties: Clear, for limestone, sandstone, cast stone and brick; Heavy Bodied Clear, a heavier bodied form of Clear; White and Colors, for stucco and concrete; and Black for below grade waterproofing.

Clear Driwal for Stain-proofing and Damp-proofing

Clear Driwal is a colorless liquid which effectively damp-proofs and prevents the staining of limestone, sandstone, cast stone, concrete and brick.

It keeps stone in its natural condition and is entirely safe for use on the lightest colored, finest textured quarry products. Clear Driwal also retards the absorption by stone of dirt and grime from the atmosphere and materially assists in keeping buildings free from the city's dirt and grime.

Specifications for Stainproofing—

New Buildings—(a) All stone dust must be thoroughly brushed off and the stone dry to a depth of at least $\frac{1}{4}$ in. before any attempt is made to treat the surface.

(b) All surfaces, except the outside face, of all cut stone shall be given one saturating coat of Clear Driwal, preferably with a flat brush.

(c) After the building has been cleaned and tuck pointed and allowed to dry, the face of the stone shall be given one or two coats (optional) of Clear Driwal, allowing at least one day to elapse between coats.

Old Work—Stone—(a) Prior to application, all exterior stone surfaces shall be cleaned.

(b) After the stone is thoroughly dry, apply one or two coats of Driwal, depending on porosity of surface.

Old Work—Brick—As the successful damp-proofing of brick surfaces depends upon the type of brick and condition of mortar joints, detailed specifications will be furnished upon request.

Specifications for Dampproofing and Dirt-proofing—(a) The surface must be clean and dry before any attempt is made to apply Driwal.

(b) The exterior surface and all joints shall be given two saturating coats of Clear Driwal, applied with a flat brush or spray. At least one day shall be allowed to elapse between coats.

Note: Driwal is not designed to lie on the surface, so no more should be used than is necessary to completely fill the pores. If too much is applied a whitish deposit is left on the surface, which, however, may easily be removed with a wire brush or turpentine.



Cincinnati Times-Star Building, Cincinnati, Ohio

SAMUEL HANNAFORD & SONS, Architects
Damp-proofed with Clear Driwal**Heavy Bodied Clear Driwal**

This material is a heavier bodied and more concentrated form of Clear Driwal. On all but the most porous surfaces Heavy Bodied Clear will satisfactorily damp-proof in one coat.

It can be used on the same surfaces as the Clear, and becomes effective in the same way.

On highly porous surfaces, where more than the usual number of coats would be required, anyway, Heavy Bodied Clear will fill the pores more quickly and more effectively damp-proof in fewer coats.

Black Driwal

Designed for below-grade waterproofing and supplied in three consistencies:

- No. 1, for fairly smooth surfaces
- No. 2, for rough surfaces
- No. 3, a paste compound for surfaces subjected to heavy pressure

White and Colored Driwal

Colored Driwal decorates at the same time it thoroughly

damp-proofs a surface, covering old stains and restoring the original fresh and attractive beauty of stucco and similar surfaces.

Colored Driwal becomes effective by penetrating into the pores of the surface and can be used on any surface where reasonable penetration can be secured, but should not, of course, be used on previously painted surfaces.

Billings-Chapin-Dri-Coat

Dri-Coat is a white pigmented damp-proof sealer for interior walls and cement floors with the unique quality that it may be applied to interior walls to stop the penetration of moisture from the exterior.

Dri-Coat in most ordinary cases will eliminate moisture trouble, but will not correct serious construction defects where there is water pressure from without.

To Specify—Not to be used over old coats of paints, kalsomine, or enamels. Normally dries hard over night for recoating. Any paint, flat wall, or enamel can be used over it when perfectly dry. Covers approximately 350 sq. ft. per gal., one coat.
Write us for further information.

BRISK WATERPROOFING COMPANY

Licensed Appliers of Larson Pre-Formed Waterproofing Units

(U. S. PATENT NO. 1970326)

103 Park Avenue, NEW YORK, N. Y.

TO PREVENT LEAKS IN MASONRY WALLS

Larson Pre-Formed Waterproofing Units

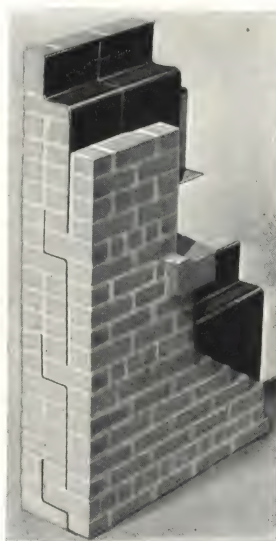
Larson Pre-Formed Waterproofing Units have been designed and developed according to the "membrane" method in such a way that they can be easily and quickly laid into and sealed within the brickwork as it is erected. A complete membrane barrier is obtained against water and dampness throughout the entire area of the wall and around all openings for doors and windows.

Easily Handled—Completely Seals All Joints

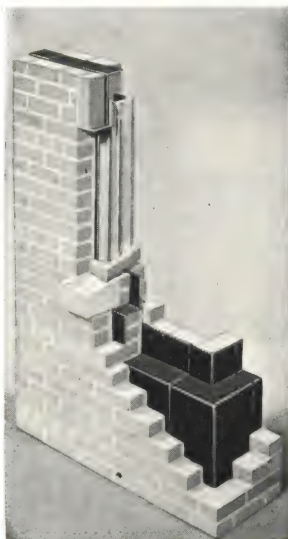
The Units are of such a size that they can be easily and quickly handled both on the scaffold and as they are built into the wall. The overlapping joints are completely sealed as they are laid and all corners are provided with specially formed units to insure a continuous water barrier locked to the standard wall units at these vulnerable points.

The design of Larson Waterproofing Units is such that the strength of brickwork is increased by their use. (See illustrations.) At each header course in the face, a corresponding header course laps it under the membrane of the unit from the inside of the wall. This results in a very sturdy bond in the wall and is easily accomplished.

This system of waterproofing is the only effective method that can be used where both inside and outside are finished brick or brick and face terra cotta.



Section Through Completed Wall



Section of External Corners

Specially Formed Spandrel Units

Considerable difficulty has always been encountered in providing tight joints between window and door frames and surrounding masonry. Special units have been designed for this purpose which interlock with the standard wall units so as completely to seal the frame from all water or dampness.

Spandrels are protected in the same manner by special units which continue the membrane at these points.

Shapes and Sizes

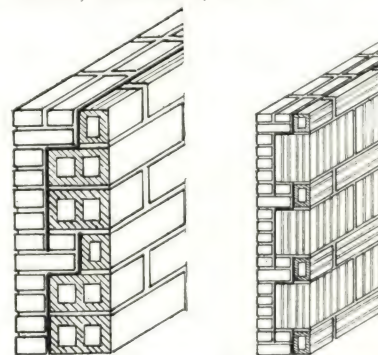
Only 5 shapes are required to meet any condition ordinarily encountered. A standard wall unit weighs approximately 2 lbs. and it is approximately 18½ in. high and 36 in. long. This provides a unit which is extremely handy and presents no difficulty when being placed in the wall. Units of special size and design can also be fabricated to meet unusual conditions.

A Specially Developed Material

Larson Pre-Formed Waterproofing Units are made of a specially developed material, extremely tough, and resilient enough to withstand the pre-forming processes and the handling and setting without injury. It is not only waterproof but resistant to corrosive action from either acid or alkali and will withstand all the chemical processes involved in the setting of cement or lime mortars. This material when embedded and sealed in the brickwork is as indestructible as the wall itself and is both impervious and impenetrable to water.

List of Installations with Architects

Tooker & Marsh, Addition to School, Patchogue, N. Y.
Tooker & Marsh, Addition to School, Tuckahoe, N. Y.
Tooker & Marsh, High School, Monticello, N. Y.
Tooker & Marsh, High School, Manhasset, N. Y.
Huse T. Blanchard, School, Rockville Center, N. Y.
Daniel Perry, High School, Port Jefferson, N. Y.
Wm. LaFon, School at Bellport, N. Y.
Leslie Dennis, Church at West Sayville, N. Y.
Frederic Wiedersum, Office Building, Rockville Center, N. Y.
Wilson & Rahm, School, Long Beach, N. Y.



Used with Concrete, Cinder or Terra-cotta Back-up

Suggested Specifications

Under General Scope of Work in Concrete, Cement, Brick and Tile Masonry, Include the Following—

Provision of and setting Pre-Formed Masonry Waterproofing Units as specified hereinafter.

Under Masonry Materials—Dampproofing—

A complete system of Pre-Formed Waterproofing Units as manufactured by Arved L. Larson, 103 Park Avenue, New York, N. Y., shall be built in the exterior masonry walls as indicated on the drawings and installed in accordance with the specifications of the manufacturers and under the direct supervision of a licensed applier. These units are to form a complete built-up membrane within the walls covering their entire area and shall be locked to all frames, etc., where openings occur and carried around all corners, columns, etc., to maintain the continuity of the membrane. Special shapes shall be provided as required. All units, standard or special, shall be set in accordance with the details shown and as required.

Under General Description of Brickwork—

The contractor for the work herein specified shall build in the pre-formed waterproofing units as specified under "Dampproofing" as the brickwork proceeds and shall carefully follow all details for this procedure and shall do this work under the direction of the manufacturers and to their satisfaction. All headers and bonding are to be arranged and carried out according to the details and are to provide for the proper installation of the waterproofing units as shown thereon.

BUILDING CHEMICALS CORPORATION

"Chemicals for Building Construction"

51 East 42nd Street, NEW YORK, N. Y.

REPRESENTATIVES AND DEALERS IN PRINCIPAL CITIES

BUILDING CHEMICALS' PROCESS FOR TRANSPARENT WATERPROOFING

[Process Patented, U. S. Pat. No. 1899391]

The Process

- (1) Repointing with waterproof cement mortar.
- (2) Forcing molten wax into open joints with heat blowers.
- (3) Saturating all pores to refusal with waterproofing under separate Hurricane Air Blast.

We furnish our Standard Specifications on request.

The waterproofing of each building is a separate problem.

We recommend that a competent architect, familiar with the structural conditions, be placed in charge of this work.

In requesting a Specification for a job condition, please give the following information: Location of building; approximate areas; type of wall and coping structure; manufacture of brick; name of stone; mortar proportions and condition of mortar, also where leakages appear in the interior.

All materials used in the Building Chemicals Process are those that have shown the highest efficiency in the experiments and tests of the National Bureau of Standards over a 12-year period.

Winter work contracts are performed under this process without loss of efficiency.

The final appearance of the process, after a short weathering period, is practically indiscernible from adjacent surfaces.

These contracts are performed only by the BUILDING CHEMICALS CORPORATION and its authorized agents under license.

Among our references for this process are:

Architects

William E. Haugaard
George S. Kingsley
McKim, Mead and White
Frank Stanley Parker
James Gamble Rogers
LeRoy P. Ward

Contractors

Cauldwell-Wingate Construction Company
Marc Eidlitz & Son, Inc.
Walter Kidde Construction Co.
North Eastern Construction Co.
Turner Construction Company
White Construction Company

New York State Standard Tests

The two photographs shown are the standard New York State 4-hour fire-hose tests, imposed on all waterproofing contracts. The Building Chemicals Process has passed, without failure, every one of these tests.



Armory, New Rochelle, N. Y.

One spot—4 hours—50 lbs. pressure

Thirteen thousand gallons against a circle six inches in diameter



Marcy State Hospital, New York

Fourteen thousand gallons on one spot four continuous hours

OTHER B.C.C. PRODUCTS

B.C.C. Oil Waterproofing—Waterproofs mortar and prevents efflorescence. Made in accordance with the best practice as set down by the U. S. Bureau of Standards and the Department of Agriculture.

BriXope Concentrated—A combination of stainless oils for removing efflorescence on brickwork. Prevents further leeching out of efflorescence and acts as a damp-proofing and brick preservative. *All work is performed in one hanging of the scaffold.*

Note: Muriatic acid may be used sparingly to remove refractory mortar stains but should be washed off immediately with a 1:3 BriXope solution.

B.C.C. Crystal Hardener—A cement floor after-treatment which, when dissolved in water, forms a solution that reacts on the free calcium in the cement topping to form calcium fluoride, providing a hard, flintlike surface which wears smooth and glossy under foot.



Hard-n-tyte Surface Hardener—This cement floor hardener, manufactured by the General Chemical Company, can be supplied from our stock.

B.C.C. Liquid Integral Waterproofing—A chemical solution for waterproofing concrete and masonry—concrete below grade, cement finish and brick mortar. An all-season waterproofing—indispensable for

winter work. Increases plasticity and saves labor.

B.C.C. Integral Hardener—A compound added to the mixing water to more quickly develop the full hardness and strength of cement finish.

Densifies the mass and makes the entire surface more resistant to abrasion.

B.C.C. Metallic Floor Dressing—A 20-40 mesh iron, oil-free—prepared for troweling into the surface of concrete or cement floors during construction.

SAMUEL CABOT, INC.

Clear Brick and Cement Waterproofings for External Application

141 Milk Street, BOSTON, MASS.

For Branch Offices and Agents, see our pages on Stains and Collopakes

Products

CLEAR BRICK and CEMENT WATERPROOFINGS.
See File Index for Cabot's Shingles, Stains, Quilt, Collopakes (for every paint use), Wood Preservatives.

For Waterproofing

All buildings made of brick, cement, cast stone, stucco or limestone.

Because the character of the surface, the texture and the porosity of cement and brickwork are entirely different, the same clear waterproofing cannot be equally good for both. The harder, coarser particles, the widely varying proportions of cement to sand in the mix, all make it impossible to put concrete, cast stone and stucco upon the same plane as brickwork where waterproofing is concerned. Therefore, in order to give the best results upon each surface we have made two different waterproofings, each one especially designed to suit the surface for which it is intended.

They are made of natural waxes (waxes produced by nature for waterproofing purposes) dissolved in penetrating solvents that carry the waxes deeply into the pores of the brick or cement work and seal them, rendering the surfaces permanently rainproof. They have been in constant and successful use for more than forty years.

Cabot's Clear Brick Waterproofing

For All Red Brickwork, Sandstone and Similar Dark Porous Surfaces

Proved by test to be three times as waterproof as linseed oil, and as it does not oxidize and deteriorate with age it is infinitely more economical than linseed oil, paraffin and varnish compounds that do oxidize and must be done over every two or three years. Clear Brick Waterproofing is colorless when applied to red or other dark brick or sandstone, but should not be used on white, gray or yellow brick, or on cement, stucco or limestone.

Prevention of Efflorescence—The white efflorescence on brickwork is due to the dissolving of the salts of the clay by absorbed rain water and their being carried to the surface when the water dries out. By thoroughly waterproofing the bricks the Clear Brick Waterproofing prevents the leaching out of these salts.

Cabot's Clear Cement Waterproofing

For Stucco, Cast Stone, Concrete and Other Light, Porous Surfaces

This waterproofing is transparent so as not to darken light surfaces.

It fills and seals all voids in cement and stucco walls. Cabot's Clear Cement Waterproofing is applied after the wall is finished and is not an integral waterproofing. Consequently, it seals the entire surface while integral waterproofings, being mixed with the water of the cement, cannot of course fill the voids that are left when the water of the mix dries out.

Cabot's

Clear Brick and Cement Waterproofings

Samuel Cabot
Inc.



South Shore Hotel, South Shore Drive, Chicago, Ill.

Waterproofed with Cabot's Clear Brick Waterproofing



Girard Trust Company Building, Philadelphia, Pa.

McKIM, MEADE & WHITE,
Architects

Cabot's Clear Cement Waterproofing used on all ornamental cast-stone parapet embellishments

On Cast-Stone—An important and ever increasing use for Cabot's Clear Cement Waterproofing is to waterproof cast-stone. Cabot's Waterproofing has made possible the use of cast-stone in large, beautiful and permanent structures, waterproofing the entire structure, reducing its natural tendency to stain, increasing the life of the material and shutting out all dampness from the interior.

Six Advantages of Cabot's Clear Brick and Clear Cement Waterproofings

- (1) They conserve the health of the building's occupants by shutting out dampness.
- (2) They keep the building warmer in winter and cooler in summer because there is no water in the walls to act as a heat conductor.
- (3) The waterproofed wall surface will not disintegrate and crumble. (A damp wall in a cold climate is constantly freezing and thawing all winter.)
- (4) They prevent unsightly saline efflorescence on brick buildings.
- (5) The building is lighter because there is no huge weight-increase through absorbed water.
- (6) Interior plaster, wallpaper, woodwork and hangings are preserved because the dampness is shut out.

Architect's Specifications for Application of Cabot's Waterproofings

Cabot's Clear Brick Waterproofing—All exterior red or dark brick walls, or sandstone, including joints, shall be waterproofed with Cabot's Clear Brick Waterproofing. Apply only to structurally sound, clean, dry surfaces with a brush, like paint, or with a spray gun. Two coats are usually sufficient but not more should be applied than the brick and joints will absorb, and no coating should remain on the surface.

Covering Capacity: 1 gal. will cover from 200 to 300 sq. ft., two coats, on common brick of average quality, and from 300 to 400 sq. ft. on face brick.

Cabot's Clear Cement Waterproofing—All exterior (concrete) (cast-stone) (stucco) (limestone) (light colored brick) surfaces, including joints, shall be waterproofed with Cabot's Clear Cement Waterproofing. Apply only to structurally sound, clean, dry surfaces with a brush, like paint, or with a spray gun.

Only as much waterproofing shall be applied as is necessary to fill all pores, and no more; but, if the surface is not uniform and some parts are more porous than others, care should be taken to apply sufficient waterproofing to fill all places. No coating should remain on the surface.

Covering Capacity: 1 gal. will cover from 200 to 300 sq. ft., two coats, on smooth concrete, brick or stone, and from 100 to 200 sq. ft., two coats, on stucco or rough cast, depending upon character and condition of the surface.

Prevention of Efflorescence—All brick walls, on which efflorescence of salts or mortar stains have appeared, shall be washed with a weak muriatic solution, following which the surface shall be rinsed with clean water and allowed to dry. Cabot's Clear Brick Waterproofing shall then be applied with a brush like paint, or with a spray gun. Only as much waterproofing shall be applied as is necessary to fill all the pores and no coating should remain on the surface.

MEMORANDA

CALBAR PAINT & VARNISH COMPANY

Manufacturers of Technical Paints, Caulking and Glazing Compounds

FACTORY AND EXECUTIVE OFFICE

2620-26 North Martha Street
PHILADELPHIA, PA.

Products

CALBAR "CAULK-O-SEAL" (Reg. U. S. Pat. Off.), NON-STAINING CAULKING, POINTING and GLAZING COMPOUND.

Also Calbar Industrial and Technical Coatings and Finishes.



to you to make a few simple tests with Caulk-O-Seal. Samples will be furnished to demonstrate its *non-staining* quality.

Calbar Caulk-O-Seal Non-staining Caulking, Glazing and Pointing Compound

The necessity for a material having an elastic nature for sealing cracks, waterproofing and glazing, prompted us some years ago to devote a large amount of time, money and effort to produce a product that would fill every requirement for varying conditions. After several years of constant experiments and gradual improvements we developed a compound which was considered the acme of perfection. Time has proven that our product is just right. Each feature has been carefully tested and we offer those, who are interested in a caulking compound of exceptional merits, Calbar Caulk-O-Seal Plastic Compound.

The saving of fuel from air leakage is an economic necessity. Heating, ventilating and air conditioning of buildings can not be controlled while there are cracks around doors and windows and other openings where air in unregulated amounts can enter. Of course, there are other things to consider also. Such openings allow dirt, dampness and deterioration to get in their work. It is well recognized at the present time that all buildings, from the modest two-story home to the highest skyscraper, require caulking. The cost is low and the benefit is great.

Caulk-O-Seal—Permanently Plastic Compound

Caulk-O-Seal is a permanently plastic compound that is impervious to heat, cold, moisture and fumes. It dries with a tough surface hide which can be painted over without bleeding through. Beneath the surface it remains plastic and pliable for years, taking up expansion or contraction of adjoining surfaces. Vibration does not harm it. It is strictly a waterproof product. It adheres firmly and tenaciously to any surface, whether glass, marble, tile, brick, concrete, wood, steel, limestone, etc.

Caulk-O-Seal—Non-staining Compound

Caulk-O-Seal is a truly *non-staining* compound. This feature is of extreme importance and we suggest that it be considered carefully. It will not stain the surrounding surface adjacent to the place applied. This is a distinctive feature of our product and worthy of consideration. Many beautiful buildings, of limestone and marble construction principally, have been marred by the use of a compound which exudes liquid. The liquid is required as it is the life of the compound. If it bleeds out, its life is lessened. It will be a revelation

Method of Application

The method of application advocated by us is by the use of a hand caulking gun. We furnish a light, powerful gun, easily operated and capable of developing a high pressure. Caulk-O-Seal is the proper consistency and is easily forced to the required depth in an opening. A canvass of caulking contractors proves conclusively that the use of a hand gun saves labor costs and does the work properly, making a smooth, even, exterior finish.

Caulk-O-Seal—Gun Grade or Knife Grade

Caulk-O-Seal is supplied in Gun Grade (for use with caulking gun) and in Knife Grade (for use with a putty knife or caulking tool). Made in white, gray, limestone, buff, natural, green, red, maroon and black. Special colors made to order in any quantity. Packed in all sized convenient containers. One gallon of Gun Grade will caulk about 150 lineal feet of an opening, $\frac{1}{4}$ in. wide and $\frac{1}{2}$ in. deep. Seventeen lbs. of Knife Grade is equivalent to one gallon of Gun Grade.

Caulking Around Window and Door Frames

In new construction, it is recommended that the compound be applied between the frame proper and the masonry. When spaces are deeper than $\frac{1}{2}$ in., they should be packed within $\frac{1}{2}$ in. of the surface with oakum and the remaining space completely filled with Caulk-O-Seal. The staff bead is then put in place.

Pointing Stonework, Terra Cotta, Copings, etc.

All joints should be raked back to a depth of $\frac{1}{2}$ in. and filled in with Caulk-O-Seal.

Glazing

For embedding and glazing glass in wood or metal sash or skylights, use the same as putty. The elasticity of Caulk-O-Seal prevents glass from breaking due to vibration or contraction and expansion.

Guarantee

Caulk-O-Seal when applied as directed under usual conditions will give exceptionally satisfactory service and last for a number of years. Many installations are still in perfect condition after ten years.

References

Many important buildings have been caulked with Caulk-O-Seal, including schools, hospitals, apartment houses, churches, public buildings, hotels, United States Government buildings, and industrial plants.

Contractors approved by us are available in principal cities of the United States.

A. C. HORN COMPANY

Products for Preservation and Decoration

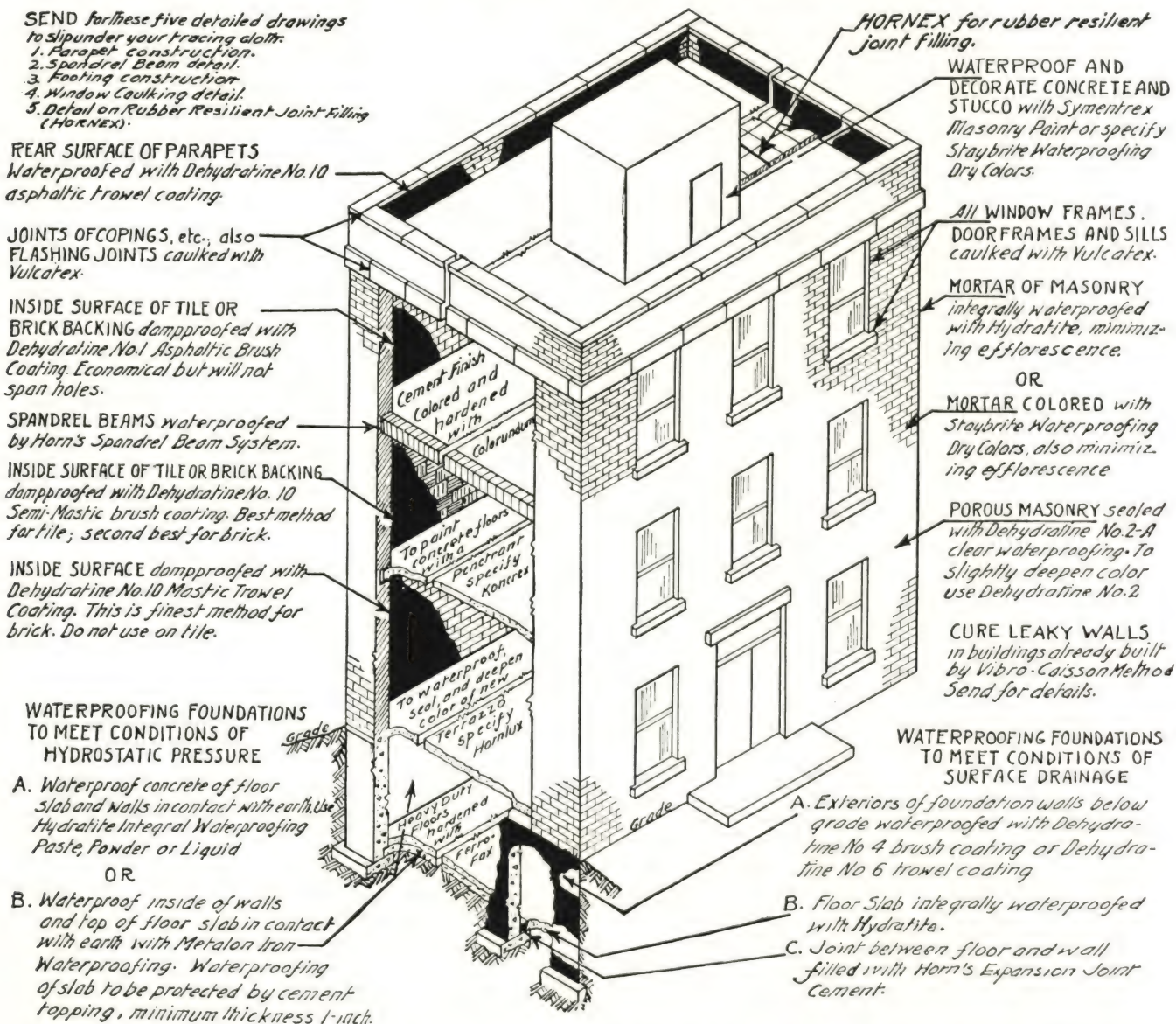
Horn Building, LONG ISLAND CITY, N. Y.

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These Products Are Time-Tested, Meet Government Specifications
and Are Among the Leaders Today for Quality, Efficiency and Economy

To Set a Proper Standard in Your Specifications—"Horn or Equal"

WATERPROOFINGS—DAMPPROOFINGS—FLOOR TREATMENTS**CHECK-CHART FOR A WATERPROOF BUILDING**

Specifications, Detailed Data and Color Cards on the Complete Horn Line Furnished on Request

WATERPROOFINGS—DAMPPROOFINGS—FLOOR TREATMENTS

To Set a Proper Standard in Your Specifications—"Horn or Equal"

COLORUNDUM Colored Floor Hardener	Colored armorplate for cement floors. Applied as a dustcoat during trowelling. Beauty and durability of tile at cement floor prices. Requires 30 lbs. per 100 sq. ft. Delivered ready for application. Non-fading, non-slip. Shipping weight: 107 lbs.	HORN LUX For Terrazzo and Composition Floors	Penetrant liquid for new terrazzo floors, immediately produces dense finish, deepened colors, soft polish, eliminates scrubbing. Restores true color and finish of magnesite floors. 1000-1500 sq. ft. per gal. Not a surface coating. Shipping weight: 8 lbs. per gal.
DEHYDRATINE No. 1 Black Brush Dampproofing	Black dampproofing, brush consistency, used on interior surfaces of brick, stone or terra cotta walls. Covering capacity 50 sq. ft. per gal., 2 coats; 80 sq. ft. per gal., 1 coat. Shipping weight: 8.5 lbs. per gal.	HORN ROCK Waterproof Cement Paint	Powder Paint mixed with water to produce a decorative, waterproof coating for concrete and masonry walls, exterior or interior. Can be applied to WET SURFACES; six colors including white. Mixed 8 lbs. per gal. water, which covers 125 sq. ft., 2 coats.
DEHYDRATINE No. 2 Transparent Waterproofing	Transparent exterior liquid waterproofing, brush consistency, for slightly deepening color to develop texture and seal porosity of masonry surface. For virgin surfaces only. 125 sq. ft. per gal., 2 coats. Shipping weight: 9 lbs. per gal.	HORNSTONE CRYSTALS After-treatment Floor Hardener	Liquid after-treatment for dustproofing concrete floors. Packed in powder form, mixed on job. 2 lbs. per gal. water. Average surface requires 1 gal. (2 lbs.) per 100 sq. ft., 2 coats. Shipping weight 100 lb. keg: 110 lbs. 14 lb. cartons (6 to case): 95 lbs.
DEHYDRATINE No. 2A Colorless Exterior Waterproofing	Colorless exterior liquid waterproofing, brush consistency. Seals porosity of masonry without changing color or texture. For virgin surfaces only, of brick, stone, stucco, masonry or concrete, 125 sq. ft. per gal., 2 coats. Shipping weight: 9 lbs. per gal.	HYDRATITE (PASTE) Integral Waterproofing	The original, patented ammonium stearate integral waterproofing used wherever cement is present. For concrete, for cement floors, brick mortar, stucco. Above or below grade. In concentrated form. Used 2 lbs. per bag of cement. Shipping weight: 9 lbs.
DEHYDRATINE No. 3 Black Stainproofing Coating	Quick-drying special black brush coating for stone and trim stainproofing backing. Protects limestone from percolation of dampness which causes discoloration. Reduces warping and dry rot of wood trim. 100 sq. ft. per gal., 1 coat. Shipping weight: 8.5 lbs. per gal.	HYDRATITE (POWDER) Integral Waterproofing	This powder performs the same function as HYDRATITE PASTE and is made in this form to meet the preference of consumers and conform to local customs. Used 2 lbs. per bag of cement. Shipping weight of standard 50 lb. bags is 51 lbs.
DEHYDRATINE No. 4 Black Foundation Brush Coating	Black outside foundation brush coating, viscous bitumastic applied cold; especially designed for below grade waterproofing. Tough, plastic, elastic, heavy in body, and water resistant. 33 sq. ft. per gal., 2 coats. Shipping weight: 8.5 lbs. per gal.	HYDRATITE (LIQUID) Integral Waterproofing	A concentrated waterproofing and hardening compound, lubricant, and densifier. Same uses as HYDRATITE PASTE. Mixed 1 qt. per bag of cement. One gal. will do 100 sq. ft. 1" topping, or 1000 brick 1:3 mortar. Shipping weight: 12½ lbs. per gal.
DEHYDRATINE No. 10 Black Trowel Dampproofing	Trowel Coating. Black plastic applied with a trowel as a dampproofing on interior of exterior masonry walls. Spans pinholes, insulates; eliminates furring; produces film of definite thickness. 26 sq. ft. per gal. coating ⅛" thick. Shipping weight: 9 lbs. per gal.	KONCREX Cement Floor Coating	More than a floor paint. A liquid protective coating for cement floors. Six standard colors, likewise transparent. Prolongs life, decorates, dustproofs. 160 to 200 sq. ft. per gal., 2 coats. Shipping weight: 10 lbs. per gal. Transparent, 9 lbs. per gal.
DEHYDRATINE No. 10 Semi-Mastic Black Brush Coating	Semi-Mastic, Black, dampproofing brush coating similar in composition to No. 10 Trowel Coating, but thinned to permit application with four knot roofing brush. For interior of exterior masonry walls. 30 sq. ft. per gal., 1 coat. Shipping weight: 9 lbs. per gal.	METALON Metallic Waterproofing	Metallic waterproofing, standard government specification. Finely divided metallic particles combined with chemicals. Used for waterproofing concrete and masonry surfaces on the inside against pressure. ½ lb. per sq. ft., 4 coats. Shipping weight: 105 lbs.
DEHYDRATINE No. 80 Integral Floor Hardener	Liquid integral cement floor hardener, accelerator and anti-freeze compound. Used one quart per bag of cement. 100 sq. ft. 1" topping 1:2 mix requires 1 gal. Saves overtime, dustproofs. Speeds brick laying when used in mortar. Shipping weight: 11 lbs. per gal.	STAYBRITE WATERPROOFING DRY COLORS Packed in paper bags. Containing these quantities	Coloring and waterproofing in one material. For cement floors, brick mortar and stucco. Packed in convenient paper sacks containing proper amount of color to use with each sack of cement. No weighing on job. No wastage. Minimizes efflorescence in brickwork.
EXPANSION JOINT CEMENT	A solid asphalt in conjunction with vulcanized oils. Melt to use. For vault lights, expansion joints in concrete or masonry. Flexible from zero to 160°. Prime first with Dehydratine No. 1 and pour hot. Shipping weight: 9.5 lbs. per gal.	Tile Red 8 lb. Japanese Black 2 lb. Persian Yellow 5 lb. Alaskan Brown 5 lb. Linoleum Brown 5 lb. China Blue 5 lb. Egyptian Green 5 lb.	
FERRO-FAX Metallic Floor Hardener: Gray, red, green and brown	Metallic floor hardener. Meets Government specifications. Free from oil and foreign metals. Produces wearproof, waterproof, dustproof concrete floor. Apply as a dustcoat. 30 lbs. per 100 sq. ft. Shipping weight: 101 lbs. per bag.	SYMENTREX Decorative Waterproofing	Decorative waterproof coating for exterior or interior concrete, stucco, brick or masonry surfaces. Highly resistant to the lime which destroys ordinary paints. Made in flat finish. 200 sq. ft. 1st coat; 300 sq. ft. 2nd coat per gal. Shipping weight: 14½ lbs. per gal.
FLORCREX Sealer for all types of wood floors	Impregnates the wood fibres. Seals by depositing synthetic compounds directly below the wearing surface; excludes dirt, stains and moisture; proof against dry rot, splintering and checking; eliminates resanding. Applied with lambwood applicator; surface excess is removed; dries overnight. 600 sq. ft. per gal. Shipping weight: 8 lbs. per gal.	VULCATEX Caulking Compound	Elastic caulking compound. Specify either knife grade or hand gun consistency. Standard colors: Dark gray, light gray, limestone, white or buff. 1 gal. will caulk 77 ft. of joint ½" wide and ½" deep. Shipping weight: 16 lbs. per gal.
		VULCATEX PRIMER	Quick drying liquid used to prevent suction and remove dust film in joints to be caulked. 1 gal. will prime 1600 lineal feet of joint ½" wide and ½" deep. 1 gal. will prime an average of 200 sq. ft. of surface 1 coat. Shipping weight: 8½ lbs. per gal.

H. B. FRED KUHL'S

Manufacturer of Kuhls' Elastic Waterproofing Compositions and Coatings

OFFICE AND FACTORY

6411-6423 Third Avenue, BROOKLYN, N. Y.

AGENTS HAVING STOCKS

CHARLESTON, S. C., Wm. M. Bird & Co., 205 E. Bay Street
 CLEVELAND, OHIO, Upson-Walton Co., 1310 W. 11th Street
 DALLAS, TEX., Lingo Lumber Co., San Jacinto Street
 JACKSONVILLE, FLA., Geo. E. Chase & Co., 325 E. Bay Street
 LOS ANGELES, CAL., Roland E. McCune Co., 231 Sansome Street

OMAHA, NEB., G. H. Alwine Co.
 PHILADELPHIA, PA., E. Webb & Son Co., 136 So. Front Street
 PITTSBURGH, PA., Fort Pitt Mfg. & Supply Co., 116 7th Street
 PORTLAND, ORE., Beebe Co., First and Washington Streets
 SAN FRANCISCO, CAL., C. J. Hendry Co., 25 Main Street

Products

ELASTIC POINTING UP COMPOSITION—For joints in copings, tops of cornices and flashings, joining of tin roofs to walls and all other projecting courses in stone or terra cotta work.

ELASTIC SEAM COMPOSITION—For expansion joints in terrazzo tile roofs, swimming pools, etc. For all joints on a horizontal plane that are subject to expansion and contraction.

ELASTIC EXPANSION JOINT COMPOSITION—For joints in tile roofs, domes, etc. All joints on an incline where a great deal of expansion and contraction takes place.

ELASTIC TILE BEDDING COMPOSITION—For bedding slate and tile roof.

ELASTIC WATERPROOF COATINGS—For outside walls and foundations.

ELASTIC TRANSPARENT WATERPROOF COATING—For brick, stone, stucco, etc.

For Kuhls' Elastic Glazing and Caulking Compositions, see File Index.

Kuhls' Elastic Waterproofing Compositions

Elasticity—Kuhls' Elastic Waterproofing Compositions never become hard or brittle. They never crack or crumble, always remain elastic and flexible, withstand heat, cold, moisture, excessive vibration, gases, fumes and rapid changes of temperature, and always make a weathertight joint.

Bond—Kuhls' Elastic Waterproofing Compositions will adhere strongly to galvanized and raw iron, steel, wood, glass, stone, concrete, terra cotta, tin, copper or any other material.

Colors—The stock colors are light gray and white, but Kuhls' Elastic Waterproofing Compositions can be manufactured in any color to harmonize with the color of the structural material at no extra charge. *These colors do not stain.*

Consistency—Kuhls' Elastic Waterproofing compositions are made for use with a trowel, knife or gun.

How Shipped—Put up in cans of 1, 2 and 5 lb.; in drums of 12½, 25, 50 and 100 lb.; in half-barrels of 100 to 500 lb.; and in barrels of 700 and 800 lb.

Service—H. B. FRED KUHL'S have in their employ men experienced and trained in their respective lines to co-operate in the fullest measure with architects, engineers and contractors. They offer a complete and efficient service in the use of Kuhls' Elastic Waterproofing Compositions and Coatings.

To assist architects located in the west, H. B. FRED KUHL'S refer them to their west coast representatives, the Roland E. McCune Co., 231 Sansome St., San Francisco, Calif., who have a staff of trained waterproofing

engineers who will gladly furnish any information and samples without obligation.

Specifications—Pointing Up Stone, Terra Cotta and Flashings—The joints shall be cleaned out thoroughly, and painted with Kuhls' Elastic Joint Paint. The joints shall then be filled with Kuhls' Elastic Pointing Up Composition with a pointing tool, knife or gun. Colors can be obtained to match the stone or terra cotta.

Note: The Elastic Joint Paint should always be used in the joints first, as it is especially prepared to prevent absorption of the oil in the Elastic Pointing Up Composition by the adjoining materials.

Pointing Joints in Copings, Tops of Cornices or Other Projecting Courses in Stone or Terra Cotta Work—The cross joints of all coping courses, tops of cornices or other projecting courses in stone or terra cotta work shall be raked out clean of all portland cement mortar for a depth of at least ¾ in. Sides of joints shall then be thoroughly painted with one or two coats of Kuhls' Elastic Joint Paint (manufactured by H. B. FRED KUHL'S, Third Avenue and 65th Street, Brooklyn, N. Y.) or until the surface shows a gloss. The joints shall then be filled with Kuhls' Elastic Pointing Up Composition thoroughly worked and pressed into the joint, to fill the entire joint, and shall be neatly finished flush with adjoining surface. Color of Kuhls' Elastic Pointing Up Composition shall be of the color as selected by the architect.

Kuhls' Elastic Seam Composition for Expansion Joints

Especially adapted when used with Kuhls' Elastic Joint Paint for expansion joints in promenade roofing tile, swimming pools, concrete work, all joints on a horizontal plane, etc. It has been successfully used on the terraces of the Capitol at Washington, Army Base in Brooklyn, Rockefeller Radio City, New York City, and for other prominent buildings, bridges, railroad work, etc. Exposure to sudden and extreme changes of temperature, as well as movement and vibration, does not affect it. It will remain elastic and stick to the sides of the joints for many years. The joint must always be painted with Kuhls' Elastic Joint Paint before applying the Elastic Seam Composition in order to secure the best results.



Specifications—Expansion joints shall be provided in promenade tile roofing where noted on drawings. All expansion joints shall be cleaned out down to the waterproofing course. After this, one or two coats of Kuhls' Elastic Joint Paint shall be applied, or until the surface of the joint shows a gloss. Then the joint shall be pointed up with Kuhls' Elastic Seam Composition, thoroughly working the material into the joint to fill the space. Finish shall be left crowned above the adjoining surfaces.

Kuhls' Elastic Expansion Joint Composition

Should be used in all joints on an incline where a great deal of expansion and contraction takes place. Used in joints on domes, faces of clocks, tile roofs, monuments, bridges, etc.

Specifications—All expansion joints shall be cleaned out down to the waterproofing course. One or two coats of Kuhls' Elastic Joint Paint shall be applied, or until the surface of the joint shows a gloss. Then the joints shall be pointed up with Kuhls' Elastic Expansion Joint Composition, thoroughly working the material into the joint to fill the entire space. The finish shall be left crowned above the adjoining surfaces.

Kuhls' Elastic Seam and Joint Paint

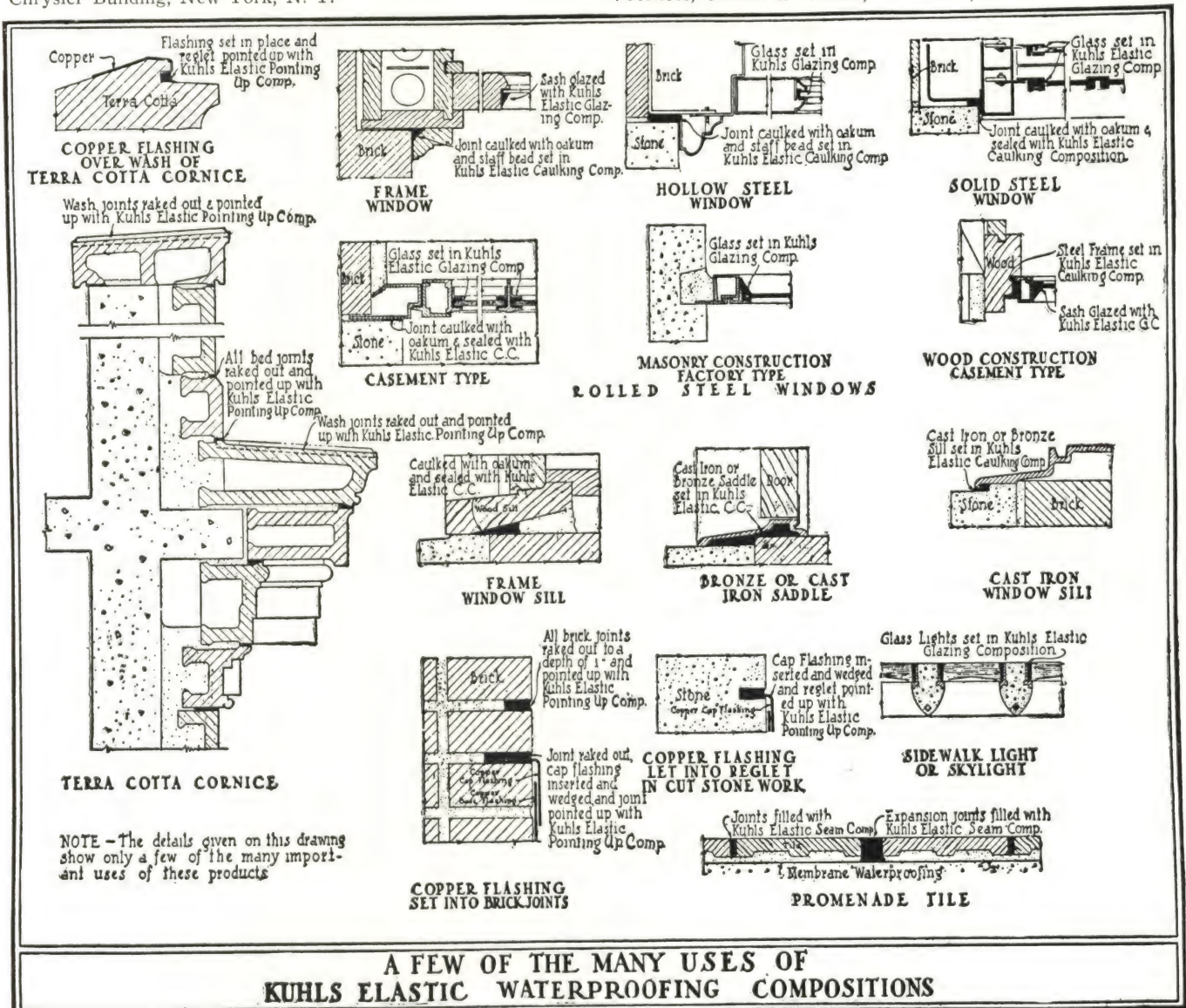
These paints are made especially for use with Kuhls' Elastic Waterproofing Compositions and should always be specified to be applied as follows: Seam Paint for wood, and Joint Paint for stone and terra cotta, etc., as it preserves the composition and assures a clean joint. These paints dry in about 10 minutes. Shipped in 1/2-pt., 1-pt., 1-qt., 1/2-gal. and 1-gal. cans.

A Few Buildings on Which Kuhls' Elastic Waterproofings Have Been Used

Northern Swimming Pool, Madison, Conn.
Seamen's Institute, Newport, R. I.
Boston & Albany Railroad, Worcester, Mass.
Baker Library, Harvard University, Boston, Mass.
Arlington Memorial Bridge, Washington, D. C.
Army Supply Base, Brooklyn, N. Y.
Rhineland Building, New York, N. Y.
Williamsburg Savings Bank, Brooklyn, N. Y.
Biltmore Hotel, Los Angeles, Calif.
Pader Pelton Building, Los Angeles, Calif.
Plaza Hotel, New York, N. Y.
B'nai B'rith Temple, Los Angeles, Calif.
Western Union Building, New York, N. Y.
Woolworth Building, New York, N. Y.
Pennsylvania Terminal, New York, N. Y.
New York Central Railroad, New York, N. Y.
No. 1 Wall Street Building, New York, N. Y.
Chrysler Building, New York, N. Y.

Some Architects Who Have Specified Kuhls' Elastic Waterproofings

J. C. Austin, Los Angeles, Calif.
Allied Architects, Los Angeles, Calif.
Charles P. Baldwin, New York, N. Y.
Claude Beelman, Los Angeles, Calif.
Carrère & Hastings, New York, N. Y.
Cass Gilbert, New York, N. Y.
Halsey, McCormack & Helmer, Inc., New York, N. Y.
Koch & Wagner, Brooklyn, N. Y.
Lee & Hewitt, New York, N. Y.
Meyer & Hunt, Los Angeles, Calif.
McKim, Mead & White, New York, N. Y.
George B. Post & Sons, New York, N. Y.
Palmer & Hornbostel, New York, N. Y.
Charles A. Platt, New York, N. Y.
Sugarman & Berger, New York, N. Y.
Warren & Wetmore, New York, N. Y.
Isaac A. Allen, Jr., Hartford, Conn.
Voorhees, Gmelin & Walker, New York, N. Y.



W. H. LOOMIS TALC CORPORATION

Manufacturers of "LOOMITE" for Improving Concrete

GOUVERNEUR, N. Y.

LOOMITE FOR CONCRETE—MORTAR—PLASTER—STUCCO

"Loomite" is a finely subdivided aggregate containing about 10% calcium silicate having a hardness of 4.5-5, specific gravity 2.85-3, and a melting point of 2650° F., is chemically inert, and not acted upon by ordinary acids or alkalis.

In concrete and mortar, its function is mechanical, as is that of sand, but owing to its extreme fineness and slip, it makes a very fat or plastic paste with cement and sand and may properly be regarded as another aggregate.

In the preparation of "Loomite" it is ground to such a degree of fineness that 98% passes the 325-mesh sieve. It is air floated to insure uniformity. Some of the high early strength cements approach this degree of fineness but the average particle size of "Loomite" being less than that of cement itself, insures a better bond with the coarser aggregates and a more impervious concrete.

There is also an increase in the volume of finished concrete of 2 to 5%.

THE EFFECT OF "LOOMITE" ON CONCRETE

Workability

In Loomconcrete (concrete with "Loomite" added) the coarse aggregates are held in suspension. It will flow in place at a flatter angle for longer distances than plain concrete without excess water or segregation, and a greater yardage can be handled in the same time at less cost per yard.

The greater flowability of Loomconcrete permits an increased upward flow of the mass that insures a better contact on the underside of structural steel than is usual with plain concrete.

the other aggregates used in concrete or mortar, a very dense cement paste is formed which resists the free passage of water.

"Loomite" is not an organic substance nor does it depend on chemical action or solubility for its waterproofing and fattening effect.

Setting

Loomite lowers the temperature of the mix, slightly increasing the time of set, a favorable feature in mass concrete where unequal setting would cause cracking.

Mortar—Plaster—Stucco

Mortar mixed in proportions—one part of cement, one part of "Loomite" by volume—and sand in proportion desired for mortar, plaster or stucco will give a plasticity, bond and acid-resistant mortar of increased strength over the standard mortar mix. There is no efflorescence from Loommortar.

Waterproofing

By mixing a proper amount of "Loomite" with

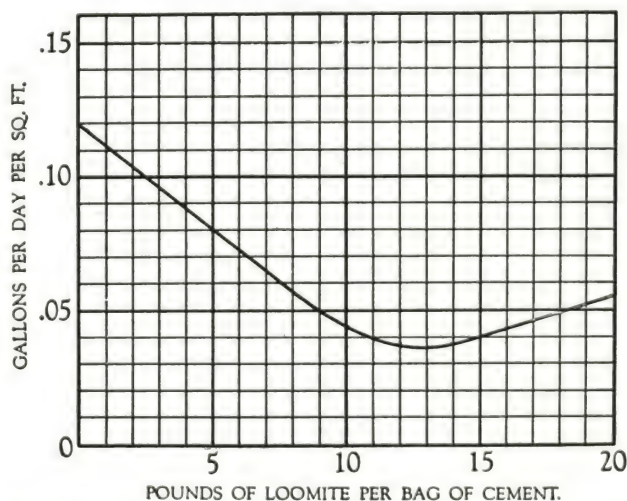


Chart Showing How "Loomite" Affects Permeability of Concrete

Increases Acid and Fire Resistance

The addition of "Loomite" to the fine aggregates results in a dense, hard finished concrete. Because of the chemical inertness of the "Loomite" itself, it greatly increases the resistance to acids and alkalis (sea water) and because of its heat-resisting qualities, tends to eliminate spalling of concrete due to exposure to intense heat, thereby protecting metal reinforcing, steel posts and girders.

Compressive Strength

It has been determined by careful study and experiment over a period of years that the use of "Loomite" as an additional aggregate in concrete increases workability, prevents segregation, waterproofs, improves fire resistance and retards the corrosive action of acids and alkalis, and does not impair the strength of concretes or mortars in which it is incorporated. Actually there is an increase in strength over plain portland cement concrete and mortar which is incidental to the denser structure and closer bond of the aggregates.

When "Loomite" is used with portland cement the compressive strength is inversely proportional to the ratio $W \div (C+L)$ rather than the direct ratio $W \div C$. In the case of stiff mixes, it is necessary to allow for the absorption of "Loomite" (about 40% by weight of the "Loomite") but in the case of soupy mixes no extra water is needed. In fact, the water may be reduced and still produce a more workable concrete.

RESULTS OF COMPRESSIVE TESTS USING AS AN ADDITIONAL AGGREGATE 50 LBS. "LOOMITE" PER YARD CONCRETE

Mix	Pounds "Loomite" per bag	Compressive Strength						
		7 days	28 days	90 days	1 yr.	3 yrs.	5 yrs.	
1:5	None 9.5	1323 1532	2184 2204	2738 2845	2528 3634	3527 3950	4301 4561	
1:6	None 11.3	1211 1405	2221 2377	2326 2373	3054 2881	3360 3284	3482 3665	

Note: The upper figure is for plain concrete. The lower figure is for Loomconcrete.

Increases Density

The curve at the left shows that the density of Loomconcrete, in pounds per cu. ft., increases in proportion to the amount of Loomite used up to 10 lbs. per bag of cement. This increased density is important in highways, garage floors, etc. The sand grains are held in place by the "Loomite" and have to be worn down instead of being dislodged in traffic. This density resists penetration of motor oils.

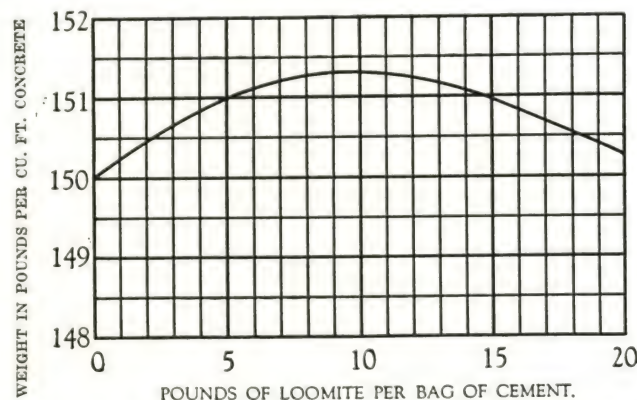
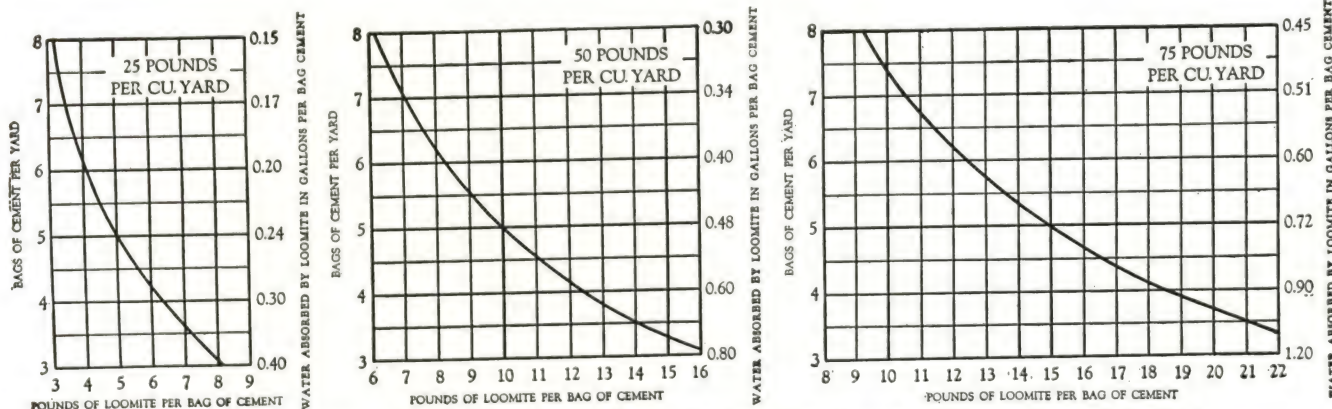


Chart Showing Increase of Density of Concrete by Use of "Loomite"

DIRECTIONS FOR THE USE OF "LOOMITE" IN CONCRETE

"Loomite" is another aggregate and should be introduced into the mix either before or with the cement. There need be no greater attention given to it than is given to any of the other aggregates. Because of its chemical inertness, it is absolutely harmless to those who handle it.

From 5 to 15 lbs. of "Loomite" per bag of cement depending on the grading of the aggregates and the use for which it is intended is all that is required to produce the desired results. The volume of "Loomite" also is somewhat dependent upon the richness of the mix.



Curves Showing Amount of "Loomite" per Bag of Cement for Different Weights of "Loomite" per Cubic Yard

Also shows amount of mixing water absorbed by "Loomite."

Shipment and Cost

"Loomite" is usually shipped in 50-lb. double walled paper sacks, 100-lb. or 200-lb. burlap bags, if preferred, at the same price f.o.b. mills, Emeryville, N. Y.

Where "Loomite" Has Successfully Been Used

In railroad tunnel linings, mine shafts, seawalls, mine walls, freight terminals, highways, garages, warehouses,

hospitals, office buildings, churches, hydroelectric projects, reservoir walls, spillways, bridges, retaining walls, etc.

Laboratory

The results from our testing laboratory for Loomconcrete and Loommortar will be mailed at your request, and our laboratory facilities are available for your special problems.

MINWAX COMPANY, INC.

A Complete Service for Waterproofing, Dampproofing and the Preservation of Wood and Masonry

11 West 42nd Street, NEW YORK, N. Y.

BRANCH OFFICE: CHICAGO, ILL.

FACTORY: DELAWANNA, N. J.

Products

There is a MINWAX product for every condition for which Waterproofing, Dampproofing, Caulking, or Surface Protection may be required. This group of products, some thirty individual materials, has been gradually evolved during the thirty years this Company has specialized in this field. The more important are listed in the following paragraphs.



Engineering Service

Our experience equips us with a special engineering knowledge on the application of our product, which we offer without reservations, to those seeking satisfactory results. We are in a position to recommend experienced, responsible organizations who specialize in the application of Minwax products. We have representatives in the principal cities; for address consult your local telephone directory.

Minwax Membrane Waterproofing

The MINWAX COMPANY, INC., originated the elastic cotton fabric system of membrane waterproofing and for the past thirty years have been the leading producer of both Saturated Fabrics and Waterproofing Asphalt. Recommendations and specifications on request.

Minwax Expansion Joint Cement

Minwax Vault Light Cement has been an outstanding and efficient material for over twenty-five years as an elastic filler for roof joints, sidewalk joints, swimming pools, etc. It is poured hot and is black in color.

Waterproofing for Walls Above Grade

New Buildings—We recommend centralizing responsibility by specifying under one heading all work necessary to assure weatherproof walls. Minwax materials cover all requirements in such a plan: (a) Waterproof cut-offs under copings or parapets, over window heads and at spandrels; (2) Dampproofing inside of outside wall surfaces under plaster; (c) Elastic Caulking around windows, in copings, cornice, water-table and similar masonry joints; (d) Transparent Waterproofing for severe exposures, stone protection, etc. Recommendations on specific projects gladly furnished.

Minwax Asphalt Dampproofing

Made from Minwax Waterproofing Asphalt and chemically inert solvents in three consistencies: *Spray Coat*, *Fibrous Brush Coat* and *Trowel Coat*. Apply two spray or brush coats or one trowel coat.

Caution: Not recommended for concrete ceilings or under cement plaster.

Note: We also produce emulsified type *Minwax Bituloid*.

Minwax Spandrel Waterproofing

A through-the-wall flashing or waterproofing cut-off constructed either with Minwax Cotton Cord Cloth and two coats of Trowel Coat Dampproofing or with *Minwax Full Seal Fabric* which is impervious in itself. Details and specifications on request.

Minwax Caulking Materials

Minwax Caulking Compounds are designed for sealing joints around window or door frames to prevent the penetration of moisture or air; also for an elastic weatherproof seal for any masonry joints, particularly in extending members such as capstones, copings, cornices, balustrades, belt courses, water-tables, etc. They are easily applied with either a hand tool, hand gun or power gun, either on new work or old. After placing, a tough smooth skin forms under which the materials remain plastic almost indefinitely. They are absolutely unaffected by conditions of heat, cold, smoke or fumes to which they may be exposed in building construction. They bond perfectly to wood, stone, steel, glass or other building material.

There are two types of material:

Minwax Caulking Compound—Is made in three standard colors—Cream white, Limestone Gray and Buff. Special colors extra. It is recommended for all locations where

an elastic caulking of light color or one to take paint is desired. It is made in two consistencies: No. 1 (soft), for gun application only; No. 2 (heavy) for knife, hand tool or gun application.

Minwax Asphalt Caulking Compound—Is made in black only and is recommended for industrial work or for surfaces where dark color is satisfactory. It cannot be satisfactorily painted over. It is non-staining and can be used against limestone and similar surfaces. Made in one consistency suitable for hand or gun application.

Minwax Caulking Guns—We can furnish efficient powerful caulking guns which assure rapid, economical application of our materials.

Specifications—This contractor shall caulk all exterior door and window frames throughout, both wood and metal. All joints between the wood or metal and the masonry at the jambs, heads and sills, shall be packed with oakum and filled solidly from the outside with Minwax Caulking Compound. The sills shall be caulked from the inside also. The caulking shall be done before staff beads are set. All joints shall be filled with compound to a depth of not less than $\frac{3}{4}$ in. Steel frames which are set after the masonry opening is built shall have the inside edge of the masonry opening buttered with the compound and shall be caulked at the heads, jambs and sills with Minwax Asphalt Caulking Compound.

Pointing Stone, Terra Cotta, etc.—All joints in stone and terra cotta on the top of copings, cornices, belt courses, washes and sills shall be raked out to a depth of $\frac{3}{4}$ in., and filled solid with Minwax Caulking Compound, color as selected.

Minwax Transparent Waterproofing

The MINWAX COMPANY, INC., has produced Transparent Waterproofing materials for over twenty-five years. Our products, therefore, are proven as to effectiveness and permanence by service and test for over a quarter century.

Minwax Transparent Waterproofings—There are two distinct types—designed to waterproof exposed masonry—brick, stucco, stone or concrete—without materially changing their color or texture. They have proven their ability to do this by sealing the pores and the minute checks, seams or fissures along which moisture will travel. They will not seal or fill visible holes or cracks, however, and therefore on brick walls and similar surfaces the importance of proper repointing, re-caulking, etc.—to provide a surface to make waterproof—cannot be overemphasized.



Rockefeller Center

REINHARD & HOFMEISTER
CORBETT, HARRISON & MACMURRAY
HOOD & FOULHOUX
Architects

Minwax Asphalt Caulking Compound



Indiana Limestone Co. Building

Minwax Colorless Waterproofing on interior limestone protects from staining

which each is recommended.

Minwax Clear Waterproofing—Recommended for red brick and darker colored porous surfaces. It is a light amber colored liquid which penetrates deeply—depositing a very large volume of solid mineral gums actually filling pores and seams. These gums do, however, bring out the underlying colors of the surface in the same way as when the surface is wet with water. *No work with this material should be done at temperatures below 55° F.*

Minwax Colorless Waterproofing—Recommended for limestone and light colored, close textured surfaces. It can be used on the lightest colored surfaces without appreciable change in their color. *No work should be done with this material at temperatures below 40° F.*

Specifications—Cut out and replace with lime cement mortar all loose and unsound joints. Apply only on clean dry surfaces at temperatures mentioned above. Apply two coats, thoroughly saturate surface with each coat. After first coat, point up incisions.

MINWAX METHOD OF WOOD FINISHING

The Minwax Method is the modern adaptation of the old-time methods of wood finishing in that it places the finish in the wood so that it becomes part of the surface. The result is not only greater beauty but the maximum of serviceability.

The Minwax Method is simplicity itself. One easily applied product made in clear and in stain colors, produces the complete finish. It has been proven by years of use in *homes*, on the larger *apartment* developments, in *clubs*, *churches*, *schools*, and on a majority of the outstanding housing projects.

On Floors (Residential)—The Minwax Method eliminates refinishing for the finish is part of the wood and worn spots can be renewed in color and finish by simply wiping up the surface with some of the shade originally used. Approved by the Southern Oak Flooring Industries Research Bureau.

On Floors, School and Industrial—The Minwax penetrates deeply and provides a tough, lasting seal which resists all deteriorating agencies. Approved by the Maple Flooring Mfg. Assn.

On Trim—Its economy, simplicity and serviceability are important. It enhances and develops the natural beauty of the wood.

Two types are available: The slow curing standard Minwax Flat Finish—and the quick-acting Minwax Quick-Drying Flat Finish.

Colors—The popular shades besides the clear or natural are Natural Oak, Light Oak, Dark Oak and Dark Walnut.

Both types—*Minwax Clear Waterproofing* and *Minwax Colorless Waterproofing*—are perfectly transparent and, used as directed, cure perfectly dust free. Each is designed to give results with minimum change in color on the type surface for

dental holes and cracks with Minwax Caulking Compound, rubbing it in so that no excess remains on the surface. Waterproof from roof flashing to grade.

Minwax Brick and Cement Coating

For Waterproofing and Decorating Exposed Surfaces of Cast Concrete, Brick or Stucco—This Minwax product is a pigment coating produced in a series of attractive flat color tones.

It is a combination of the highest grade inert mineral pigments obtainable in a carrying vehicle based on Minwax Clear Waterproofing (one of the oldest, best known and most efficient mediums for exposed wall waterproofing).

The coating penetrates and becomes part of the concrete or brick, and the vehicle penetrates well below the surface and permanently waterproofs it.

Applied with a brush or spray. Handles with unusual ease. Covers rapidly and effectively, between 160 and 250 sq. ft. per gal. per coat, depending upon the roughness and porosity of the surfaces to be treated.

Colors—Finished in 11 standard colors: white, cream, yellow, cement gray, limestone gray, caenstone, green, brownstone, terra cotta, blue and brick red. Special colors extra.

Specifications—General—All surfaces shall be thoroughly dry, clean and sound. Brush surface to remove dust, sandy and loose material. Apply two (on common brick and for maximum life three) coats, first coats thinned with Minwax Brick and Cement Coating thinner; final coat straight.

Note: Neutralize green, new masonry with a solution of two lbs. zinc sulphate in one gallon of water.

No work shall be carried forward at temperature below 45° F.

Covering Capacity—500 to 800 sq. ft. per gallon per coat.

Minwax Flat Finish (Standard)—Cures more slowly, penetrates deeper and gives a soft luster rather than a high polish. Waxing is optional after a curing period of two weeks.

Minwax Quick-Drying Flat Finish—Cures quickly, offers wider choice of colors, gives higher polish and harder finish. Waxing with Minwax Finishing Wax is always recommended.

Colors—The following colors are supplied *both* in (standard) Flat Finish and Quick-Drying Flat Finish: Natural, Natural Oak, Light Oak, Dark Oak, Dark Walnut. These stain effects are transparent and are particularly recommended for floors and trim.

The following colors are supplied *only* in Quick Drying Flat Finishes: Colonial Pine, Colonial Maple, Special Walnut, Red and Brown Mahogany. These stain colors are not entirely transparent and tend to bring boards of different color to a uniform tone. Recommended for furniture and paneling. *Not* recommended for floors.

Specifications—Wood shall be clean, free from all shellac, varnish or other finish, dry and carefully sanded. Apply two coats, wiping excess as directed and polishing second coat to dry hard finish. For a high polish apply Minwax Finishing Wax.

Note: Fillers are not necessary but can be used if desired, in which case apply in usual manner after first coat of Minwax Flat Finish.

FOR SCHOOLS—

Below:
New Rochelle
High School
GUILBERT &
BETELLE,
Architects
Minwax used on
floors



FOR RESIDENCES—

Residence of James Gamble Rogers II,
Winter Park, Fla.

JAMES GAMBLE ROGERS II, Architect
Minwax Flat Finish used on floors

FOR HOUSING— Hillside Housing

CLARENCE STEIN, Architect
STARRETT BROS. & EKEN, Contractors
Minwax Flat Finish on floors of 1416 units.
This is one of ten nationally recognized Housing
Projects for which Minwax has been selected

MEMORANDA

"The Vital Ingredient for Permanence in Concrete"



"OMICRON"
DISCOVERED
1927

OMICRON PRODUCTS

THE MASTER BUILDERS COMPANY • CLEVELAND OHIO

THE MASTER BUILDERS COMPANY

7016 Euclid Avenue
CLEVELAND, OHIO

IN CANADA:
The Master Builders Company, Ltd.
71 Browns Avenue
Toronto, Ont.

BRANCH OFFICES

ATLANTA, GA., 511 Bona Allen Bldg.
Telephone, Jackson 5339
BALTIMORE, MD., 4148 Eierman Ave.
Telephone, Liberty 7400
BOSTON, MASS., 18 Piedmont St.
Telephone, Liberty 3351
CHICAGO, ILL., 228 No. La Salle St.
Telephone, State 4175
COLUMBUS, OHIO, 415 First Nat'l Bank Bldg.
Telephone, Main 3178
DALLAS, TEX., 612 Construction Bldg.
Telephone, 7-3423
DETROIT, MICH., 602 Michigan Theatre Bldg.
Telephone, Cherry 2234
LOS ANGELES, CAL., 827 Laurel Ave.
Telephone, Oregon 9076
MILWAUKEE, WIS., 774 No. Broadway
Telephone, Broadway 0955
MINNEAPOLIS, MINN., 703 Third Ave., So.
Telephone, Atlantic 4803

Research Laboratories: Cleveland

TECHNICAL SERVICE

26 years of field experience and laboratory research in concrete and mortar treatments stand back of Master Builders Specifications and Products.

This specialized knowledge is "on call" for architects and builders.

Please telephone or write our nearest office.

BRANCH OFFICES

MONTREAL, QUE., 1434 St. Catherine St., W.
Telephone, Plato 6720
NEW YORK, N. Y., 101 Park Ave.
Telephone, ASHland 4-0160
PHILADELPHIA, PA., 901 Architects' Bldg.
Telephone, Rittenhouse 2231
PITTSBURGH, PA., P. O. Box 115
Telephone, Wellington 2260
READING, PA., 2115 Highland St.
Telephone, Sinking Springs 819-823
ST. LOUIS, MO., 304 Farmers & Merchants Trust Bldg.
Telephone, Central 8844
SAN FRANCISCO, CAL., 525 Market St.
Telephone, Sutter 1100
TORONTO, ONT., 58 Wellington St., E.
Telephone, Melrose 1798
WASHINGTON, D. C., 807 Chandler Bldg.
Telephone, National 6303

Factories: Cleveland, Buffalo, Toronto

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REPRESENTATIVES

(For Street Address and Phone Number, Consult Directory)

AUGUSTA, GA.
Augusta Bldg. Supply Co.
BALTIMORE, MD.
Monumental Brick & Supply Co.
BIRMINGHAM, ALA.
Thomas Supply Co.
BUFFALO, N. Y.
Troup Engineering Co.
CALGARY, ALBERTA
Bell & Morris
CHARLOTTE, N. C.
A. L. Simpson
COCOANUT GROVE, FLA.
Renart Lumber Co.
COLUMBIA, S. C.
Bass Roofing Co.
CUMBERLAND, MD.
Young Sales & Engr. Co.
DALLAS, TEX.
Macatee, Inc.
DENVER, COLO.
Rucky Min. A. & B Service
DES MOINES, IOWA
A. J. Crawford
DUBUQUE, IOWA
Baumgartner Sales Service
FORT SMITH, ARK.
Harry E. Barr
FORT WORTH, TEX.
Sloan Lumber Co.
GRAND RAPIDS, MICH.
Lincoln Brick Co.
GREENVILLE, S. C.
J. C. Flouder
HELENA, MONT.
R. C. Grant
HOUSTON, TEX.
A. M. Bowles
JACKSONVILLE, FLA.
Geo. P. Coyle
JOHNSON CITY, TENN.
Eustis A. Lancaster
KALAMAZOO, MICH.
Miller Lumber Co.
KANSAS CITY, KANS.
A. C. Cooke Coal & Cement Co.
KANSAS CITY, MO.
C. A. Brockert Cement Co.
KNOXVILLE, TENN.
R. G. Jeffries
LA CROSSE, WISC.
Louis E. Meier
LANSING, MICH.
Briggs & Co.
LEXINGTON, KY.
Clay-Ingels Co.
LITTLE ROCK, ARK.
Chas. S. Watts
LOUISVILLE, KY.
R. C. Tway Coal Co., Inc.
MIDDLETOWN, CONN.
Sherman C. Ellis
MILWAUKEE, WIS.
W. H. Pipkorn Co.
(Continued on Margin of Inside Back Cover)

"The Vital Ingredient for Permanence in Concrete"

OMICRON

Omicron, discovered in 1927 by Master Builders Research Laboratories, is a synthetic puzzolana suspended in a gelatinous colloid. The importance of this development cannot be overestimated because it marks a new and radical advance in the effort to increase the practical life of concrete structures.

Omicron's unique function is to REDUCE water-cement ratio while actually increasing plasticity. The result is—an important reduction in shrinkage.

Being a synthetic puzzolana (concentrated) it combines with and renders insoluble a large portion of the lime content.

The result, attested in the laboratory and field, is greatly increased resistance to freezing and thawing and mild corrosive action.

Omicron, of itself, is not a commercial product. It is available only as an exclusive ingredient of The Master Builders Products which are described in following pages.

WHAT OMICRON DOES

Reduces Shrinkage

When used in concrete and mortar, Omicron Products actually *reduce shrinkage through their unique function of substantially increasing plasticity with water-cement ratio reduced—up to 12½%—*regardless of type or kind of cement used and regardless of design of mix.

Inasmuch as control of *volume change*—i.e., reduction of shrinkage—is paramount in concrete and mortar construction, Architects and Engineers who realize this vital significance now have at hand a positive remedy.

Resists Disintegration and Corrosion

Being a highly concentrated puzzolana, Omicron converts a substantial percentage of the soluble lime into insoluble cementitious compounds. The resultant structure becomes much more resistant to weathering, freezing and thawing and mild corrosive action.

PITTSBURGH TESTING LABORATORY

2" x 4" Compression Specimens Immersed in 10 per cent Sodium Sulphate

Pounds per Square Inch	28 days in Water	21 days in Acid	Loss from Corrosion
1:3 concrete, untreated	3750	3500	6.6%
1:3 concrete, plus Omicron	4487	4400	1.7%
Increase with Omicron	19.6%	25.7%	

Increases Plasticity

Omicron is distinguished in principle from any known plasticizers because they function without reducing water ratio and only to correct under-sanded mixes. In contrast, the extreme plasticity imparted by Omicron Products *under all conditions* permits a reduction in the water ratio—whether the mix be over-sanded or under-sanded. Because of its shrinkage reducing function, Omicron is of immense value even in a perfectly designed and graded mix.

Permanently Increases Strength

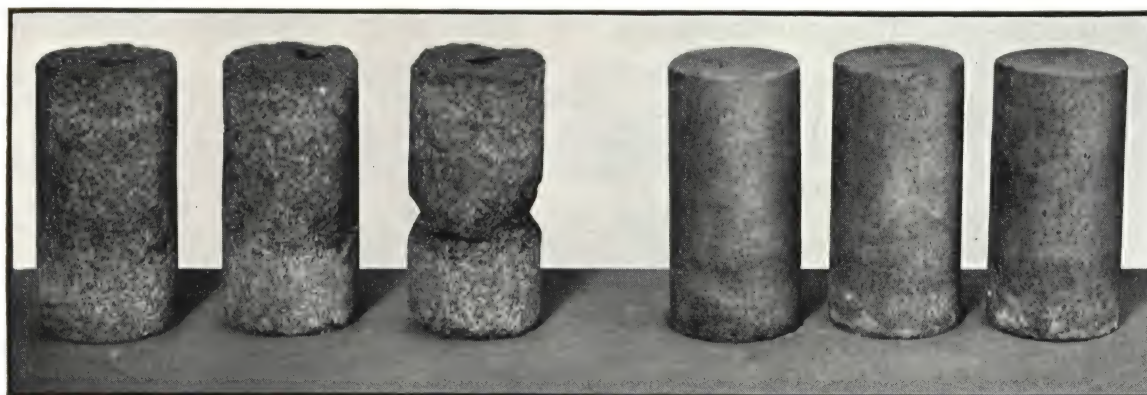
Tests by Hunt, Pittsburgh Testing Laboratory and other independent laboratories show that the Omicron Ingredient accounts for a substantial, permanent increase in strength over plain cement mixes. The following test is typical. Additional and detailed reports furnished upon request.

ROBERT W. HUNT COMPANY

1 cement: 3 sand. Compressive Strength in Pounds per Square Inch

Age	Untreated	Plus Omicron	Per Cent Increase
3 Days	1557	1823	17
7 Days	2295	2775	20.9
28 Days	2909	3587	23.8

THE EFFECTS OF 48 CYCLES OF FREEZING AND THAWING ON MORTAR CYLINDERS



Untreated

With Omicron



For LEAKPROOF BRICKWORK AND MASONRY

Mortarproofing

TRADE MARK

The only logical and proven remedy for SHRINKAGE, the real cause of leaks in brickwork.

Authorities agree that shrinkage of mortar which results in cracks between mortar and brick, is the major cause of leakage.*

All mortars shrink excessively during the first forty-eight hours before a strong bond is formed between mortar and brick. Shrinkage occurs regardless of whether patented masonry, cement, or lime mortars or combinations of cement and lime are used; waterproofed or otherwise.**

Shrinkage is inevitable in any mortar mix because more than twice as much water is required to provide workability than is needed to hydrate the cement.

*Only by reduction of water content without loss of workability can shrinkage be checked.**** That is exactly what mortarproofing does.

MORTARPROOFING PRODUCES AN IDEALLY WORKABLE MORTAR WITH MUCH LESS WATER AND REDUCES SHRINKAGE APPROXIMATELY 50%, OR BELOW THE CRITICAL POINT AT WHICH IT BREAKS THE BOND.



**STOP These
Shrinkage Cracks with
MORTARPROOFING**

MORTARPROOFING DOES MORE THAN REDUCE SHRINKAGE, IT . . .

.... Increases Plasticity

Not only does Mortarproofing retain the required workability with less water—it actually increases it. The gelatinous properties of Mortarproofing so increase the plasticity that the mason must automatically reduce water or add sand—or both—to obtain proper consistency.

.... Checks Efflorescence

The puzzolan action of the Omicron ingredient in Mortarproofing reduces the soluble salts which cause efflorescence originating from the mortar.

.... Reduces Water Absorption

The stearate ingredient of Mortarproofing assists bond, checks capillarity, and renders pores water-repellent.

.... Improves Adhesion

The plasticizing effect of Mortarproofing increases the extent of bond.

.... Increases Strength

Greater density resulting from reduced water-cement ratio increases the bond, shear and compressive strengths of the mortar.

*L. A. Palmer and D. A. Parsons, "Permeability Tests of 8-in. Brick Wallethes," A.S.T.M., 6-25-34. Boston Chapter, American Institute of Architects, Bulletin of December, 1931, Committee Investigating Leaks.

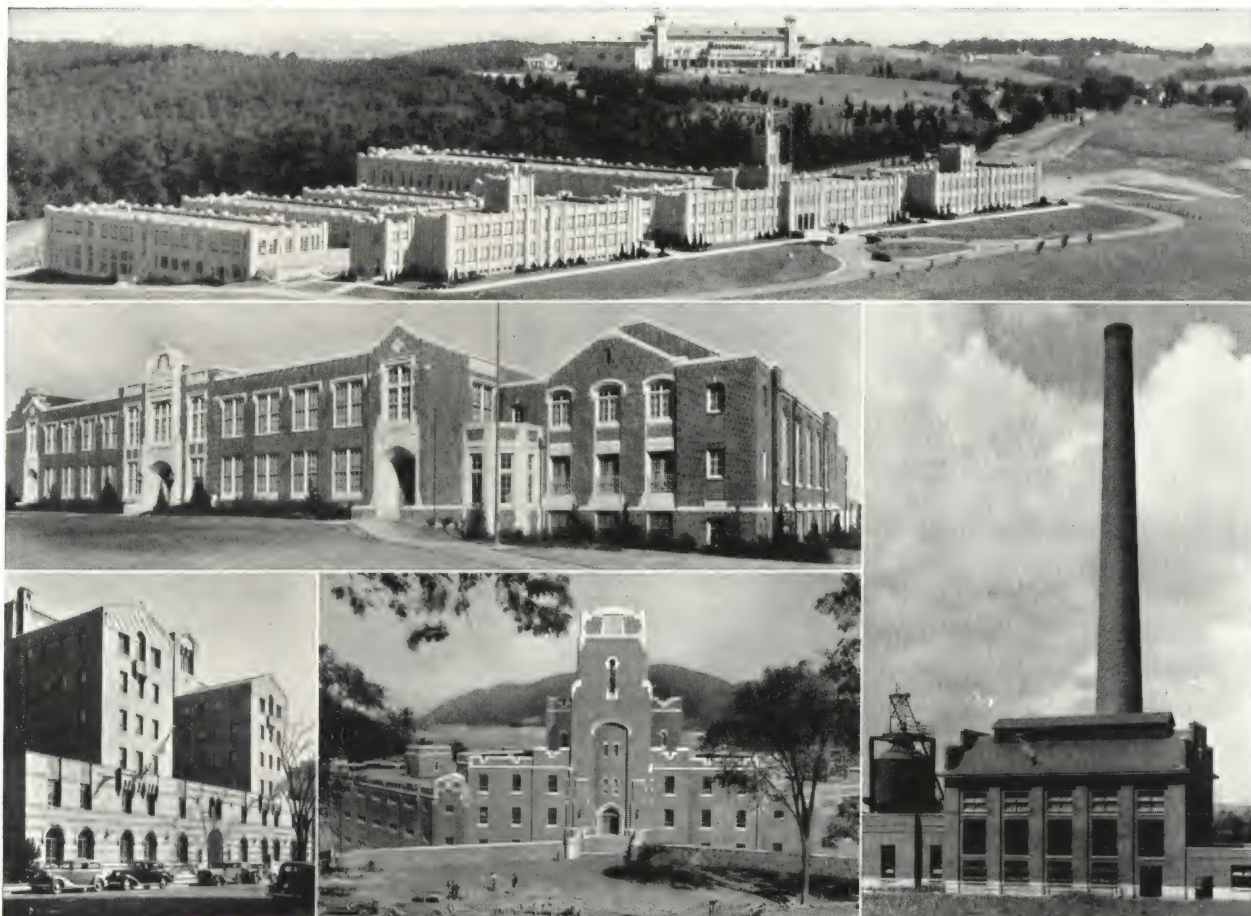
**Bureau of Standards Research Papers Nos. RP-683 and RP-746.

***P. H. Bates, President of the American Concrete Institute at the 31st Annual Meeting, New York, February, 1935: "... A very large part of the mixing water should really be called 'placing water.' ... We are, therefore, attaining a strength less than the potential strength and in so doing also materially affecting adversely the properties of volume change and durability. If the composition of a cement or its physical nature can be so modified that the water required is reduced, we are approaching the potential strength, increasing the durability, and reducing the volume change. ..."

See Page 6 for Specifications and Test Data



MORTAR FOR 40,000,000 Bricks MORTARPROOFED IN 1935



Hershey Industrial School (Foreground) and Hershey Hotel (Background)—3,537,000 Mortarproofed Bricks. J. L. Long Junior High School, Dallas, Texas—Bryan & Sharp, Archt. Central Y. M. C. A., Toledo, Ohio—Mills, Rhines, Bellman & Nordhoff, Toledo, Ohio, Architects. Gymnasium—U. S. Military Academy—West Point—One of Numerous Buildings Involving 5,700,000 Mortarproofed Bricks. Power House—Baltimore City Hospital—300,000 Mortarproofed Bricks.

Brick construction in all parts of the country is being Mortarproofed. Some of the outstanding applications of 1935 are illustrated above or listed below.

J. C. Penney Store, Milwaukee, Wis.
Kirchoff & Rose, Milwaukee, Wis.
Ebenezer Mitchell College, Salisbury, N. C.
Odis Clay Poundstone, Atlanta, Ga.
Amanda E. Stoudt High School, Reading, Pa.
Ritcher & Eiler, Reading, Pa.
9 State Police Barracks in Massachusetts
Stevens, Curtin & Mason, Boston, Mass.
Coca Cola Bottling Company, Tuscaloosa, Ala.
Carl B. Cooper, Montgomery, Ala.
University of Georgia, Augusta, Ga.
Scroggs & Ewing, Augusta, Ga.
Hiram Walker Distillery, Peoria, Ill.
Smith, Hinchman & Grylls, Detroit, Mich.
R. C. Church of Assumption, Syracuse, N. Y.
Hans P. Weber, Syracuse, N. Y.
General Hospital, Laundry & Power Plant, Kansas City, Mo.
Archer & Radotinsky, Kansas City, Mo.
Albrecht Residence, St. Joseph, Mo.

E. I. DuPont de Nemours, Wilmington, Del.
Several Bldgs. Private Plans
Felters Company Plant, Binghamton, N. Y.
A. W. Bowie, Binghamton, N. Y.
Perfect Circle Piston Ring Co., Hagerstown, Ind.
J. A. Harris Bldg., Blue Bell, Pa.
Willing, Sims & Talbutt, Philadelphia, Pa.
Exeter School, Exeter, R. I.
Ambrose J. Murphy, Providence, R. I.
University of Tennessee, Biology Bldg., Knoxville, Tenn.
Barber & McMurray, Knoxville, Tenn.
North Mount High School, Fort Worth, Texas
W. C. Hedrick, Inc., Fort Worth, Texas
Wichita Falls Hospital, Wichita Falls, Texas
Voelcker & Dixon, Wichita Falls, Texas
Western Electric Company, Baltimore, Md.
Upjohn Co.—Power Plant, Kalamazoo, Mich.
Albert Kahn, Inc., Detroit, Mich.
First National Bank, Lewisburg, Pa.
Lawrie & Green, Harrisburg, Pa.

See Page 6 for Specifications and Test Data



IN CANADA
THE
MASTER
BUILDERS
CO., LTD.
TORONTO
MONTREAL

(See also pages 4 and 5)

TESTS PROVE MORTARPROOFING EFFICIENCY

REDUCES SHRINKAGE

FROM COLUMBIA UNIVERSITY TEST Nos. 2356-57

Mix	Shrinkage in Inches 2" x 4" Specimens			Bond Strength 28 days	Comp. Strength 28 days
	24 hrs.	7 days	28 days		
1:1:6	.027	.030	.030	66.8*	704*
1:1:6 with M.	.017	.019	.020	72.7	740
1:2:9	.022	.024	.023	73.0	490
1:2:9 with M.	.018	.014	.015	90.8	569
1:2:11 with M.	.010	.014	.015	74.9	462

Average of three specimens. *Pounds per sq. inch.

STRENGTHENS BOND

Mix	Water Ratio	Bond Strength of Mortar			Comp. Strength 28 days
		7 days	14 days	28 days	
A	.95	2070	1670	2150	2037
B	.95	2130	2010	3500	2226
C	.95	2070	1770	3800	2100
D	.85	1070	2170	2900	2670

A—1:3 plus 15% lime—untreated.

B—1:3 plus 15% lime—with Mortarproofing.

C—1:3 plus 15% lime—Red Mortarproofing.

D—1:3—no lime—with Mortarproofing.

CHECKS EFFLORESCENCE

The gradual dissolution of soluble salts in mortar is the prime cause of its efflorescence. This R. W. Hunt Test, No. 58769, is a reliable measure of the absence of solubles.

Tensile Specimens Immersed in ½% Sulphuric Acid:

Pounds per Square Inch	28 Days in Water	21 Days in Acid	Loss From Corrosion
1:3 Concrete, Untreated	470	432	8.8%
1:3 Concrete, Plus Omicron	520	513	1.3%
Per Cent Increase with Omicron	10.6%	18.5%	

SPECIFICATION (NON-COLORED)

Mortar for all exterior walls shall be composed of (1 part Cement: 1 part Lime Putty; 6 parts Sand; 1:2:9; an approved masonry cement, or other mix as designated) to which shall be added Master Builders* Omicron Mortarproofing in the proportions of 1 quart per each sack of Cement and 1 quart per each cubic foot of Lime Putty, in exact accordance with the directions of the manufacturer, THE MASTER BUILDERS CO.

(*For color, insert name of color here and change amount to use in accordance with color chart.)

COLORS

Colored Mortarproofing mortar retains the inherent qualities of the uncolored Mortarproofing including *reduction of shrinkage*.

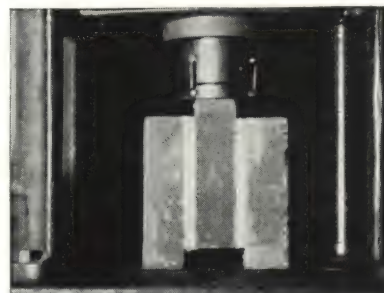
Colored Mortarproofing joints *do not fade*. Whereas ordinary mortar colors seriously impair compressive strength, Colored Omicron Mortarproofing increases compressive strength over plain mortar; greatly *reduces shrinkage*.

Doubles Plasticity with Lower
Water Ratio



MIX—1 Cement: 1 Lime: 6 Sand
A B
6 gal.—WATER—5¼ gal.
0—MORTARPROOFING—¼ gal.
2⅛"—SLUMP—4¾"

Shear Test



3500 Lbs. Pressure Required to
Break Mortarproofed Bond

REDUCES WATER ABSORPTION

Mix—1:3	Percent absorption by weight				Decreased absorption
	1 hr.	2 hrs.	1 day	Totally immersed	
Untreated	1.4	1.8	2.5	3.4	....
Mortarproofing	0.7	0.9	1.1	1.8	47%
Average—4 stand- ard Stearate Pastes	0.65	0.875	1.3	1.85	47%



IN CANADA
THE
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MONTREAL

Reduction of the salts which cause "fading" and producing colors ground to a colloidal fineness eliminates the fading, weakening of joints and increased shrinkage.

Colors Available: Chocolate, Black, 3 shades of Buff, 3 shades of Red, 2 shades of Brown.

Write or phone for color chart.

CEMENT PAINT FOR ALL MASONRY SURFACES

MASTERTEX

For Exterior and Interior of Brick, Tile, Stucco, Stone and Other
Masonry Surfaces

PAINTS or coatings containing oils, glues, caseins or other volatiles will not adhere to wet masonry surfaces. If applied to dry walls that later become wet they saponify and come off.

Mastertex thrives on moisture, and is proof against chemical action of lime, alkali or water. It contains the basic ingredient, Omicron, which increases strength and resistance to corrosion.



Pool,
Oakwood Club,
Cleveland

Geo. B. Mayer,
Architect

Characteristics

Mastertex waterproof cement paint, specially designed for exterior and interior coating of concrete, brick, tile, stucco, stone and other masonry, is applied directly to the wet surface, forms a permanent bond, becomes a part of the wall. It will not blister, peel or flake and its hardness increases with age and with successive wetting. It can be washed or brushed clean repeatedly without being injured.

Mastertex seals pores and hair cracks, checking leakage and absorption. It is applied directly to fresh concrete immediately after stripping forms, speeding the job to completion.

Not designed for use on floors or on vitrified, enameled, magnesite, gypsum, or lime surfaces.

Advantages

Only type of coating that adheres firmly to damp basement walls, swimming pools, garden pools, tanks, tunnels, and other masonry subject to constant moisture. Recommended for inside white on all masonry surfaces, particularly in dairies, laundries and other plants subject to steam, fumes and humidity. Extensively used in reintegrating spalled concrete structures and as a finish cement stucco coat. Most economical and long-lived outside white for all masonry because of its resistance to dampness and weathering.

Specification

All surfaces as indicated on plans shall be given two coats of Master Builders (insert color) Mastertex, waterproof cement coating, following the directions of the manufacturers, The Master Builders Company.

Mastertex Colors



135 BLUE



157 CREAM



155 IVORY



145 GREEN



165 LIGHT GREY



166 FRENCH GREY



168 DARK GREY

Also
132 White

Other colors
made to order



IN CANADA
THE
MASTER
BUILDERS
CO., LTD.
TORONTO
MONTREAL



INTEGRAL LIQUID COLORED HARDENER COLORMIX

COLORMIX is the original colored integral floor hardener using the gauging water dye principle. Its notable performance has made Colormix the "standard of comparison" for over 15 years.

The efficiency of the product, combined with Master Builders technique, in which leading floor finishing contractors are today well-acquainted, make it possible for the architect to specify Colormix with full confidence in the finished result.

Inexpensive—Permanently colors and hardens floors for less than the cost of two paintings.

Uses

Recommended when separate top finish integrally colored is desired as in

Hotels	Salesrooms	Hospitals
Clubs	Residences	Institutions
Schools	Churches	Offices

And wherever decorative wear-resisting floors are needed—for both interior and exterior areas.

Strength

Colormix increases strength from 20% to 35% over plain concrete.

Short Specification

The concrete floor finish as indicated shall be colored and hardened with (insert name of color from chart, page 10) Colormix, 1 gallon to each sack of cement, exactly in accordance with the directions of The Master Builders Company. Floors shall be cured and protected by the use of non-staining waterproof paper. When ready for use surface shall be cleaned and shall be given a finish treatment of Colorwax applied in accordance with directions of the manufacturer, The Master Builders Company.

Characteristics

1. Colormix is *supplied in liquid form* to be added to the gauging water or directly into the mixer. Thorough dispersion is thus obtained, assuring uniformity of color and hardness.

2. Colormix contains Omicron (see page 3) which *reduces shrinkage* through its unique function of substantially increasing plasticity with water-cement ratio reduced up to 12½%.

3. The Omicron Ingredient in Colormix preserves fullness or richness of colors by checking efflorescence and color clouding.

4. Colormix contains no calcium chloride.

Colorwax

Colormix Floors, when cured, should be polished with Colorwax, which comes in corresponding colors.

The wax develops and preserves the full beauty, making cleaning easier and protects surface from staining.

Colors

Please refer to color chart, page 10.





COLORING AND HARDENING FLOORS IN PLACE DYCROME

DYCROME provides an unusual technique for permanently coloring and hardening existing *plain* concrete floors. Finish provided is permanent because colors are etched into the surface.

Advantages

1. Attractive color range to harmonize with existing interior color scheme. Produces a variety of interesting shades of Blue, Green and Brown.

2. Colors include Flemish Oak, Weathered Bronze, Cordovan Brown, Palmetto Green, Nile Green and Jade.

3. Permanent finish because the colors are *etched into the concrete*.

4. Hardens the surface—resists wear and dusting.

5. Cost over period of even few years only a fraction of cost of repeated paintings which wear rapidly. Also much less costly and much more artistic than laying linoleum or installing wood or special flooring.

Specification

Existing Floors—The concrete floor finish shall be colored and hardened with the Master Builders' Dycrome Method as applied by the Master Builders Service, Inc., or their authorized representatives.

Installing New Floors—Mortar for floors to be Dycromed shall be proportioned (mix desired), to which shall be added two pounds of hydrated lime for each bag of cement in the mix. Floors shall be turned over to the Master Builders Service, Inc., properly cured and in a clean and stainfree condition.

PAINTING DAMP FLOORS SUPER-COLORSEAL

FOR painting basement or other floors lying directly on the ground.

Where moisture penetration makes application of oil paints impossible.

Super-Colorseal, a rubber base paint, has *more than 3 times the life* of the best oil paints.

Where moisture penetration is a problem, Seal-Coat, a recently developed penetrating treatment for damp or wet floors is first applied. This seals the floor and makes it moistureproof. Over this Seal-Coat, Super-Colorseal is applied 24 hours later.

Moisture penetration from below is permanently stopped and painted surface will be tough—will not scuff and is highly wear-resistant.

Colors

Tan—Tile Red—Nile Green—Dust—Light Gray—Medium Gray—Dark Gray—Steel Gray.

Specification

Floor surfaces as indicated, shall be treated with Master Builders' Moisture-Proof Seal-Coat followed by application of Master Builders (insert color) Super-Colorseal in accordance with the directions of The Master Builders Co.



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MONTREAL

HARDENING AND COLORING FLOORS BY LOW COST—DUST-COAT METHOD COLORED METALICRON

COLORED METALICRON is a dry compound of superfine colors, Omicron and tough, wear-resisting aggregate. It produces an integrally colored wearing surface that is non-absorbent and highly wear resistant.

Colored Metalicron type of finish has been standard for over 20 years. Thousands of these floors from 5 to 20 years old are in service today. The method of installation is well known to experienced floor finishers and therefore can be specified with full confidence.

Initial cost less than that of two coats of paint—year by year cost incomparably lower.

Uses

Recommended for use either in separate top finish or where topping is omitted and base is finished off as a wearing surface ("monolithic").

For

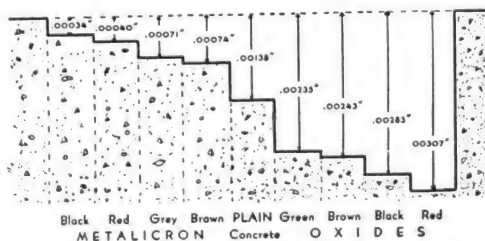
Office Buildings	Garages	Service Stations
Loft Buildings	Basements	Salesrooms
		Sidewalks

Characteristics

1. Two or three times more wear resistant than plain cement finish.
2. Omicron ingredient protects colors from clouding and efflorescence.
3. Omicron ingredient resists attacks of acids, alkali solutions and corrosive agents.

Strength

Abrasion tests show that Colored Metalicron floors are two to three times more wear-resistant than plain cement finish. Twenty-eight-day concrete slabs subjected to abrasion show the relative strength of—(a) plain concrete, (b) concrete colored with high grade commercial oxides, and (c) concrete colored and hardened with Colored Metalicron.



Tested and Reported by James H. Herron Company, Testing Engineers and Chemists, Cleveland, Ohio

Non-Slip

A special formula of Colored Metalicron with non-slip aggregate is manufactured for use in finishing colored ramps, corridors, stairs, wet areas where slip-proof surface is desirable.



Red Metalicron Floor in service station of Gulf Refining Company, Miami. Waterproof, hardened and colorfast. Protected from stain and corrosive action of oil and grease drippings by Omicron ingredient.

COLORMIX & METALICRON COLORS

Color shades shown subject to slight variation with different brands of cement and aggregates.



Also available in Black and White.

Short Specification

The concrete floors shall be colored and hardened with Master Builders* Colored Metalicron using no less than 30 lbs. of Colored Metalicron and 22 lbs. of cement for each 100 square feet of surface, applied in accordance with the directions of The Master Builders Company.

**If non-slip feature is desired, insert words "non-slip."*



IN CANADA
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COLORLESS SURFACE WATERPROOFING MASTERSEAL

Masterseal waterproofs brick, tile, stucco, stone and concrete without changing the appearance of the surface. It retards disintegration, resists corrosive action of smoke and fumes and prevents sanding, stain and efflorescence.

Two types of Masterseal are available—All-Weather Masterseal—for use on *wet or dry brick walls* down to 33° F.—and Masterseal No. 1 and No. 2 for *dry surfaces of brick, tile, stucco, stone or concrete* above 50° F.

All-Weather Masterseal

Waterproofs walls when they *need* waterproofing—during wet weather. May be applied to wet or dry brick surfaces at any temperature down to freezing point. (All other transparent waterproofings require at least 50°).

In Spring or Fall, when walls are likely to remain wet for days, All-Weather Masterseal can be successfully applied without waiting for walls to dry out.

Contractors lose less time on job on account of rain. Their costs and their bids will be lower.

With conventional materials which require warm dry walls the likelihood of work completed under pressure with some areas treated before they are dry is a danger removed when "All-Weather" is used.

"All-Weather" has $2\frac{1}{2}$ times the covering capacity of conventional surface waterproofings; two coats of All-Weather Masterseal are equivalent to 3 to 4 coats of the latter.

Designed for use on brick surfaces only; for stone, stucco, etc., use Masterseal No. 1 or No. 2.

Specification

All brick surfaces as indicated on plans shall be treated with Master Builders All-Weather Masterseal, surface waterproofing, following the directions of the manufacturers, The Master Builders Co.

Three of the Largest
Buildings at Canadian
National Exhibition,
Toronto, Ont.



MASTERSEAL used to
Waterproof and
Preserve These
Structures



For Waterproofing Brick, Tile, Stucco, Stone, Concrete

Masterseal No. 1—Transparent, darkens light surfaces slightly, but it is the longest lived of the conventional type.

Masterseal No. 2—Colorless and invisible, slightly less permanent than No. 1 or "All-Weather," under equal conditions.

These *must* be applied to dry surfaces, at or above 50° F. One gallon for 2 coats on 150 sq. ft. average surface.

Short Specification

All surfaces of brick, tile, stucco, stone and concrete as indicated on plans shall be treated with Master Builders (Insert Masterseal No. 1 or No. 2) colorless surface waterproofing following the directions of the manufacturers, The Master Builders Co.



WATERPROOFING PASTE FOR MASS CONCRETE AND MORTAR

STEAROX "30"

STEAROX "30" is a pure stearate waterproofing paste containing 30% stearic acid.

Stearox "30" has been made possible by the discovery of a new process of introducing straight concentrated stearic acid into concrete without the aid of useless adulterants.

An Authority States

"The stearate or stearic acid ingredient is the most effective constituent and the value of commercial waterproofing pastes and powders seem to depend largely upon their stearate content.

"Analyses of commercial waterproofing pastes show great variations in their stearate content. It has been the practice to add substances such as alkalies and ammonia to waterproofing pastes. *A pure stearic acid, if it can be made easily soluble in the mixing water, would be the most desirable.*"

F. O. Anderegg, Ph.D.,

Consulting Specialist on Building Materials.

Stearox "30" is *pure, unadulterated, and quickly dissolved.*

Advantages

Since authorities agree that stearate content controls waterproofing value, Stearox "30"—which contains 30%—has indisputable advantages when compared with other preparations. One of the most widely used of these contains only 16% stearic acid—another only 3%.

Water absorption of concrete is reduced 60% when Stearox "30" is applied. Tests show not only the lowest total absorption but the lowest rate of absorption, which is equally important.

	1 Hr.	1 Day	Decreased absorption
Plain 1:3 mortar	.9%	1.5%	....
Stearox "30" (.6 lbs. per sack cement)	.3%	.6%	60%
6 brands paste Avg. (1½ lbs. per sack cement)	.53%	.617%	59%
6 brands powder Avg. (2 lbs. per sack cement)	.7%	1.1%	26%

Economies

Only 3.6 lbs. of Stearox "30" are required to provide standard waterproofing value. This compares with 9 to 36 lbs. of other types.

Handling and transportation charges are lower, because Stearox is more compact than other waterproofing preparations.



Penik & Ford's Grain Elevator—Cedar Rapids
Stearox "30" used throughout

Protection

It is difficult to determine the relative waterproofing value of different brands because there is no convenient way of determining stearate content. (Recent analyses have shown an extreme variation of stearic acid contents and indicate that builders have received not bargains, but only what they paid for or less.)

Stearox "30" has a positive standard of value. The builder knows he is getting a preparation with 30% stearic acid—the purest, strongest and most for the money.

To insure receipt of full value, the following specification is advisable: "The waterproofing shall be free of non-stearic ingredients, and not less than .6 lbs. of 30% Stearic Acid Paste (or corresponding increased proportion of paste of lesser stearic acid content) shall be used per sack of cement."

Specification

All mass concrete shall be waterproofed integrally by the use of not less than 3.6 lbs. of Master Builders Stearox "30" waterproofing paste per cubic yard of cement, used exactly in accordance with the directions of the manufacturers, The Master Builders Co.



COMMERCIAL & LIGHT DUTY INDUSTRIAL FLOORS

MASTER MIX

EXPERIENCE has proved that the best way to harden a concrete floor is—*integrally*. Surface treatments serve their purpose as corrective measures, but at best are temporary, whereas the *properly* integrally hardened concrete floor will last indefinitely.

Master Mix has been the standard integral liquid floor hardener and waterproofer (non-colored) for commercial and light industrial concrete floor finish since 1915.

Ideal for office building, laundries, auditoriums, lofts, schools, garages, and similar areas subject to heavy foot traffic or light trucking.

Important Characteristics

1. Many integral hardeners are solely or principally calcium chloride solutions. They accelerate the set, give a higher early strength, but cause serious shrinkage. Master Mix, containing Omicron, is not a calcium chloride product.

2. By virtue of its Omicron content, it *reduces* shrinkage while *increasing* plasticity with *reduced* water-cement ratio. The proven result is a dense hard and permanent floor.

3. High plasticity permits the use of a dry mix with silica and other hard aggregates—easy to trowel—prevents dusty surface.

4. High compressive strength withstands wear indefinitely.

5. Master Mix Floors not affected by mild corrosives because Omicron combines with a substantial portion of free lime *throughout* topping.

STRENGTH TEST (TENSILE)

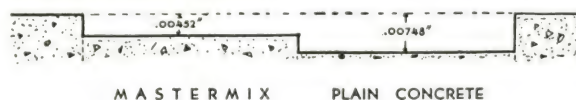
Pittsburgh Testing Lab. No. 62951

Tensile Strength Pounds per Square Inch	Untreated	Master Mix	Per Cent Increase
Age			
7 days	490	568	15.9
28 days	603	692	14.7
90 days	655	722	10.2
365 days	688	815	18.4

ABRASION TEST

Columbus Testing Laboratories, Columbus, Ohio

Relative depth of wear on concrete slabs, cured 28 days, measured after six hours of constant abrasion:



HOW MASTER MIX IMPROVES WORKABILITY



"A" with MASTER MIX—"B" without MASTER MIX

1 part cement to 2 parts sand. 4 1/4 gal. water plus 1 quart of Master Mix. SLUMP, 6 1/2".

1 part cement to 2 parts sand. 4 1/2 gal. of water. SLUMP, 3".

Specification

Use two quarts per sack for floors subject to corrosive agents as in dairies, breweries, packing plants, etc., followed by surface application of Concrete Preservatives (see Page 15).

The concrete floor finish shall consist of one part standard portland cement, one part clean, graded, gritty sand and two parts clean, hard pea gravel or crushed stone graded in size up to one-quarter inch. (For light traffic areas change mix to "one part portland cement and two parts clean, graded sand.") Floor shall be hardened with Master Builders Master Mix, used in the proportion of one quart of Master Mix per sack

of cement. The Master Mix shall be added to the gauging water, or shall be thrown directly into the mixer. Not over 5 gallons of liquid, including the Master Mix and moisture in the aggregate, shall be used per sack of cement. The finish mortar shall be placed, finished and protected in accordance with directions of The Master Builders Co.

COLORED MASTER MIX

Identical in all respects to Master Mix—plus colors. It colors and hardens entire thickness of topping and is ideal for low cost color treatment of large areas. Colored Master Mix floors receive a supplementary treatment of Glazecoat,

which imparts a permanent finish. For large areas the results produced by the Colored Master Mix-Glazecoat method cannot be duplicated by any other means for less than several times its small cost.

Red . . . Brown . . . Tan . . . Gray . . . Black



IN CANADA
THE
MASTER
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CO., LTD.
TORONTO
MONTREAL

HEAVY DUTY INDUSTRIAL FLOORS METALICRON

WEAR-RESISTANCE—the long recognized quality of metallic hardened floors, is now supplemented by *corrosion resistance* in the Metalicron floor through its Omicron ingredient.

More than twenty years of experience have demonstrated that the Metallic Hardened type of concrete floor, originated in 1910 by The Master Builders Co., is the most wear-resisting and economical floor for industrial and heavy traffic, as in warehouses, machine shops, pulp and paper mills, steel mills, foundries, garages, etc.

Important Characteristics

Metalicron is pure Master Builders water-absorbent metallic hardener combined with Omicron. It *guarantees double protection* for concrete floors:—

1. A hard, long-wearing surface.
2. Protection from disintegration, from cutting oils and alkalis that commonly attack industrial floors.
3. Because it greatly increases the workability of the finish mortar, Metalicron can be easily and perfectly incorporated in *dry mixes* (where ordinary hardener is not workable), thus affording all the advantages of low water-cement ratio.

Recently certain "imitations" of Metalicron have appeared. Conclusive evidence, however, proves the outstanding superiority of Metalicron. (Facts upon request.)

Performance

The performance of Metalicron Floors in such typical installations as the following explains the universal acceptance of Metalicron Floors as the best Heavy Duty Floor for Industry:

The Pittsburgh Plate Glass Co., Pittsburgh, Pa.
Merchandise Mart, Chicago
Western Electric Co., Kearney, N. J.
The McGraw Hill Publishing Bldg., New York City
Ford Motor Company
The Continental Can Co., Chicago, Ill.
The Pennsylvania Railroad and scores of other equally discriminating users.

Facts to Consider

Even the best hardeners are inexpensive. An initial saving of perhaps one-half cent per square foot, through the purchase of a hardener "just as good," is hardly justified when this slight saving may jeopardize the desired results in a floor costing 12 to 20 cents per sq. ft. to install.

Metalicron is an essential ingredient for excellence in all concrete floors. Modern methods and materials, such as special types of floors, silica aggregates, etc., in no way obviate the necessity of the use of Metalicron.

Short Specification

The concrete floor finish shall be hardened with Master Builders Metalicron using not less than (here insert "30 lbs." for average duty, "40 lbs." for heavy duty or "50 lbs." for extremely heavy duty floors) of Metalicron for every 100 square feet of surface. The Metalicron shall be applied and the floor finished and protected in accordance with the directions of The Master Builders Co. (If the non-slip finish is desired, insert the words "Non-Slip" before the word "Metalicron.")



St. John's Park Freight Terminal, New York Central Railroad
1,300,000 sq. ft. of Metalicron Floors. J. F. Pfan, Chief Engineer;
James Stewart & Co., General Contractors; United Specialty
Construction Co., Floor Contractors

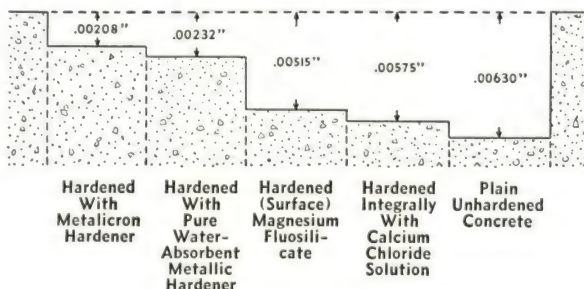
DISINTEGRATION CHECKED

Report No. 65412, Pittsburgh Testing Laboratory
4" x 2" compression cylinders of 1:3 concrete, plain and treated with Metalicron, were stored in water and in a corrosive solution of 10% sodium sulphate for periods given. Note comparative resistances to disintegration.

Age Days	Stored In	Comp. Strength Lbs. per Sq. Inch		Increase With Metalicron
		Plain 1:3 Concrete	With Metalicron	
60	Water	3653	4653	27.3%
	10% Sod. Sul.	2827	4563	61%
	Loss from Corrosion	22%	2%	
90	Water	3233	4857	50.2%
	10% Sod. Sul.	2437	4683	92%
	Loss from Corrosion	24%	4%	

ABRASION CHECKED

Concrete specimens subjected to abrasion tests show following relative wear resistance:



Non-Slip Metalicron

The standard formula is changed to include non-slip aggregate. Specify "Non-Slip Metalicron" for use on ramps, stairs and other areas where non-slip finish is desired.



OTHER MASTER BUILDERS PRODUCTS

Detailed descriptions, technical data and specifications on any of these products sent upon request

METALLIC WATERPROOFING

Master Builders Metallic Waterproofing is applied to either inside or outside wall surfaces, usually the inside surface. It permanently seals all pores and cracks, and provides a water-tight metal-cement sheath that defies time and elements. Applied as successive brush coats or as a plaster coat, or both, as conditions require.

Metallic Waterproofing is used widely instead of the more expensive and difficult membrane method. One great advantage is the ease with which structural cracks or leaks are located and cheaply repaired. Metallic Waterproofing is a permanent seal and bond for repairing and re-integrating masonry and concrete structures.

BONDING IRON

For Bonding Separate Top Finish to Hardened Concrete Slab

Bonding to a set slab is largely a matter of workmanship, but results are surer when Master Builders Bonding Iron, specially designed for this purpose, is used. Bonding Iron is applied in a two-coat treatment to the base slab after the surface has been roughened and thoroughly cleaned and saturated with water. The first coat oxidizes, providing a waterproof sheath that prevents the dry base from drawing moisture from the topping. The second coat provides an additional mechanical key. Approximately 15 pounds per 100 square feet required.

Specification

Where a cement finish is to be applied to a set slab, the slab shall be thoroughly roughened with picks and broom cleaned; slab shall then be saturated with water, given two coats of Master Builders Bonding Iron applied exactly in accordance with directions of the manufacturers, The Master Builders Co.

CAULKING COMPOUND

In nine colors and natural. Applied by knife or gun.

FOR CONTROL OF SHRINKAGE IN CONCRETE

POZZOLITH

For Mass Concrete

Prolongs life of concrete by increased density and reduced shrinkage, which intensifies resistance to freezing, thawing and corrosion. Pozzololith does this through puzzolanic action, reducing the solubles, and by reducing water ratio and increasing workability in any mix, whether undersanded, oversanded or well graded.

For More Specific Information Concerning Pozzololith and Embeco, Write or Phone Us or Our Nearest Representative

SANISEAL

For Floors Already Installed

Master Builders Saniseal is a powerful chemical hardener, which when mixed with water and brushed into the floor surface, deposits in the pores a hard, wear-resisting crystal. This arrests dusting and hardens the surface.

Saniseal is designed as a maintenance or corrective treatment for floors already installed. Not less than 2 lbs. of Saniseal should be used per 100 sq. ft.

CONCRETE PRESERVATIVE

Protects concrete from the attack of reagents which ordinarily cause rapid deterioration, such as solutions of alkalis, acids and salts. It is a moderately viscous amber liquid of a non-volatile synthetic base, which, when applied on any dry concrete surface, penetrates and fills the pores with a waterproof corrosion resistant. An excellent alkali-resisting priming coat for oil paints to be used on concrete or masonry, as it waterproofs, forming a strong bond between paint and concrete, preventing blistering and peeling. Concrete Preservative is recommended for application to all concrete exposed to severe corrosive conditions, such as floors in food manufacturing plants, bakeries, laundries, concrete tanks and vats, sewers, silos, bottling plants.

PLASTER BOND

A black bituminous-base adhesive paint for excluding dampness from the inside of exterior walls that are to receive a plaster finish.

FOUNDATION COATING

A black elastic hydrocarbon waterproofing applied cold to exterior surface of masonry below grade.

THE
MASTER
BUILDERS
CO.
CLEVELAND
OHIO

REPRESENTATIVES

(For Street Address and Phone Number, Consult Directory)

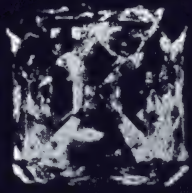
(Continued from Page 2)

MONTGOMERY, ALA.
T. M. Gorrie
MONTREAL, QUE.
Webster & Sons, Ltd.
NASHVILLE, TENN.
John Williams Co.
T. L. Herbert & Sons Co.
NEW ORLEANS, LA.
Clifford A. King, Jr.
J. J. Clarke Co.
NIAGARA FALLS, N. Y.
Empire Bldg. Sup. Co.
NORFOLK, VA.
W. O. Sherman
OKLAHOMA CITY, OKLA.
Bissell Bldg. Sup. Co.
OMAHA, NEBR.
Earl S. Lewis & Co.
OTTAWA, ONT.
Webster & Sons, Ltd.
PHOENIX, ARIZ.
Walter Dobree
PITTSBURGH, PA.
McCready-Rodgers Co.
PLATTSBURG, N. Y.
Dock & Coal Co., Inc.
PORT ARTHUR, ONT.
Ernest A. Cuff
PORTLAND, ORE.
McCracken-Ripley Co.
QUEBEC CITY, QUE.
Webster & Sons, Ltd.
ROCHESTER, N. Y.
Geo. A. McNeerney
ROCKY MOUNT, N. C.
M. P. J. Williams
ST. LOUIS, MO.
Heinecke Coal & Mat'l Co.
ST. PETERSBURG, FLA.
E. L. March
SALT LAKE CITY, UTAH
Hawley-Richardson-Williams Co.
SEATTLE, WASH.
Tourtelotte-Bradley Co., Inc.
SYRACUSE, N. Y.
F. J. Ludwick
TAMPA, FLA.
J. E. Wood
TOLEDO, OHIO
Kuhlman Co.
TOPEKA, KANS.
Ray Anderson
UTICA, N. Y.
American Hardwall Plaster
VANCOUVER, B. C.
The O'Neil Co., Ltd.
WALKERVILLE, ONT.
Kenneth E. Shaw
WASHINGTON, D. C.
A. F. Woodson Co.
WHEELING, W. VA.
H. L. Seabright Co.
WICHITA, KANS.
Spencer Allen Fuel Co.
WINNIPEG, MAN.
Walker's Limited



IN CANADA
THE
MASTER
BUILDERS
CO., LTD.
TORONTO
MONTREAL

"The Vital Ingredient for Permanence in Concrete"



"OMICRON"
DISCOVERED
1927

OMICRON PRODUCTS

THE MASTER BUILDERS COMPANY • CLEVELAND OHIO

ESTABLISHED 1905

OSCAR W. NEVINS CO., INC.

Manufacturers of Waterproofing and Damp-proofing Materials
Approved Roofing Contractors, Building Maintenance Work

TELEPHONE
Bergen 3-7991

931 Pavonia Avenue, JERSEY CITY, N. J.

"SURESEAL" WATERPROOFING PRODUCTS

Sureseal products provide an economical and effective solution of waterproofing and damp-proofing problems. Each *Sureseal* product is scientifically compounded according to a formula of recognized merit and each has been thoroughly tested in the laboratory and its effectiveness proven in the field.

Sureseal Caulking Compound

Stops leaks in concrete and brick walls and concrete floors. *Sureseal* Caulking Compound can be used to stop leaks against pressure even under water.

We will supply sufficient material (5-lb. package) to quickly and thoroughly stop several leaks of moderate size, on receipt of \$2.00, sent prepaid to any point in the United States.

Metallic Hardener for Cement Floors

A finely ground iron to be steel-troweled into the topping of the cement floor before it sets. Makes floors dustless, waterproof and wear-resistant. Use from 20 to 50 lbs. per 100 sq. ft., depending upon traffic and service required.

Sureseal Crystals and Liquid Hardener

An economical, easy method of producing hard, dustless wear-resistant cement floors. Simply dissolve crystals in water and apply liquid to floor with a brush. Recommended for new or old floors. Covering capacity, approximately 2 lbs. per 100 sq. ft. Supplied ready-mixed if desired.

Sureseal Exterior Transparent Waterproofing

A colorless, non-staining liquid for damp-proofing and waterproofing well-pointed masonry and brick walls of all kinds. Provides absolute protection against severest weather. Applied with brush or spray. Covering capacity approximately 90 sq. ft. per gal., (2 coats), depending on porosity of surface.

Sureseal Bonding Iron

Finely ground and powdered iron applied to the roughened base slab before application of the topping. Assures a perfect bond and prevents disintegration of the floor. Use approximately 15 lbs. per 100 sq. ft.

Sureseal Integral Liquid Waterproofing

Added to the gauging water, it produces concrete that is waterproof and damp-proof, accelerates the set and allows quick finish and early use of the work. In mortar it retards efflorescence on brickwork. Acts as an anti-freeze in winter and makes concrete oilproof and acidproof. Recommended proportion—1 qt. per bag of cement.

Sureseal Interior (Black) Dampproofing Paint

For all masonry surfaces and plaster bonding. Recommended as a preservative backing coat on stone in buildings, monuments, etc. Can also be used to bond plaster to masonry without furring.

Waterproofing and Fireproofing for Canvas

A liquid protection for canvas for ship decks, stage settings, etc. Furnished in any color for brush application.

We have developed special machinery for applying this material to canvas and make a specialty of waterproofing and fireproofing canvas in any quantity. Canvas shipped to us for this purpose will be treated and reshipped promptly. Estimates for waterproofing and fireproofing canvas in any quantity gladly furnished on request.

How Sureseal Products Are Furnished

Sureseal products are furnished as follows:
Liquid and Paste Form—5-gal. cans, 30 and 50-gal. drums.
Powder and Crystal Form—10, 50 and 100-lb. packages.
Shipments made by parcel post, express or freight, f.o.b. New York. Local deliveries free.

CONTRACTORS FOR BUILDING MAINTENANCE SERVICE

We contract for any kind of interior or exterior waterproofing and damp-proofing work on all types of buildings, including commercial, industrial, public, residential, etc.

Interior Waterproofing

For many years we have specialized in the waterproofing of buildings of all types *from the inside*. From basement to roof, we have a suitable material to make surfaces proof against water and moisture. Thus working and living conditions are improved, spoilage of merchandise is prevented and all at a surprisingly low cost. We will be glad to assist in the solution of any waterproofing problem—*consultation involves no obligation*.

Exterior Repointing and Waterproofing

The exterior of brick buildings can be made waterproof with a colorless liquid which keeps the inside of the building absolutely dry regardless of the weather.

The work includes thorough cutting out of mortar joints by compressed air gun and perfect repointing with a waterproof and non-shrinking cement mortar before application of the waterproofing agent. Windows and doors are caulked with picked oakum and plastic cement, applied with a special tool and pressure gun, and sash is securely fastened with metal weatherstrips.

We have successfully and economically waterproofed buildings of all types and will furnish estimates promptly for any job—*large or small*.

Other Work

The OSCAR W. NEVINS Co., INC. will contract for any of the following work:

- Waterproofing and repairing roofs.
- Waterproofing boiler pits, tanks, pools, etc.
- Old brick walls repointed, plastered, cement-coated and waterproofed.
- Interior and exterior surfaces sprayed with paint (any color), or waterproofing liquid, using high pressure equipment.
- Membrane method of waterproofing.
- Concrete and paving breaking.
- Iron coating.
- Damp-proofing.
- Oilproofing, acidproofing and dustproofing of floors, tanks, pits, etc.
- Cement finishing and plastering.
- Old worn cement floors repaired and re-surfaced.
- Sidewalks and driveways laid.
- Repointing foundations, walls and all kinds of brick and stone work, etc.
- Cement and masonry work, repointing.
- Cement and paint spraying.
- Chimneys rebuilt.
- Windows caulked and weatherstripped.
- Application of floor hardeners and dustproofers.

APPROVED ROOFING CONTRACTORS

Estimates furnished for the following types of roofing for public and commercial buildings, industrial plants and residential structures:

Specification Built-up Roofs—bonded for 10, 15 or 20 years. Asphalt and asbestos Built-up Roofs. Tar, slag and gravel roofs. Sheet metal work. Cornices, skylights, etc.

Only the best materials available are used and experienced labor employed in installation.

Work is guaranteed to give satisfaction both in initial cost and in service.

EXTERIOR BUILDING CLEANING SERVICE

We specialize in cleaning all types of building exteriors by the compressed air cleaning process—an outstanding development in this field. In this system, chemicals, heat, water, soap and pressure are scientifically combined to produce an atomized cleaning solution at just the right tem-

perature to do a complete cleaning job—quickly, thoroughly, economically and without injury to the surface. In connection with this work, we will contract to do all necessary caulking of windows and repointing of masonry surfaces. *Complete information and estimates gladly furnished.*

We are always glad to assist in the solution of Waterproofing and Building Maintenance Problems

THE OBELISK WATERPROOFING COMPANY

The Heat Method

1819 Broadway
NEW YORK, N. Y.

TELEPHONE
Circle 6-2360-1

Services

Exterior Surfaces of Stone, Brick and Stucco Buildings, above grade, TREATED with the CAFFALL PROCESS, the Heat Method.

Business, Residential and Monumental Buildings and Churches Restored, Dampproofed and Preserved; Exterior of Delicate Marble Preserved from Weather Disintegration; Monuments Restored and Preserved.

Guarantee

Work done under contract with a 10-year guarantee, or a cost-plus-percentage basis without guarantee.

Process

New Structures—The surface is tested and structural defects, if any, are made good. The wall is then impregnated to considerable depth with a melted wax compound forced in by heat.

Old Structures—Where masonry walls leak but material disintegration has not occurred all joints are tested and made sound where necessary, and the entire surface, including joints, treated as above.

This company makes a specialty of repairing masonry buildings which have been damaged by the weather or through vibration or other causes. Many walls which are sound upon casual inspection prove to have been seriously affected.

Where the surface has disintegrated from weather attack, it is restored to sound condition, joints are repointed, and the entire surface treated as above. The treatment leaves the appearance unchanged, and one treatment will last for the life of the building.

It will be understood that application of heat to buildings, particularly to fine marble and granite, requires expert skill. Heat dries out the surface and forces penetration of preservative material. On cooling, the wax congeals and becomes an integral part of the material at and below the surface.

Durability

The principal components cannot be easily oxidized and are insoluble in water, acidulated or alkaline solution, or gases. This is the only preservative process having a successful history covering any considerable period. Buildings treated more than sixty years ago are still dry.

Cost

Cost can be ascertained on application to the company.

It is determined by the following elements:

Character of material to be treated.

Area requiring treatment.

Character of surface, whether plain or ornamental.

Condition, whether newly erected, old or requiring renovation.

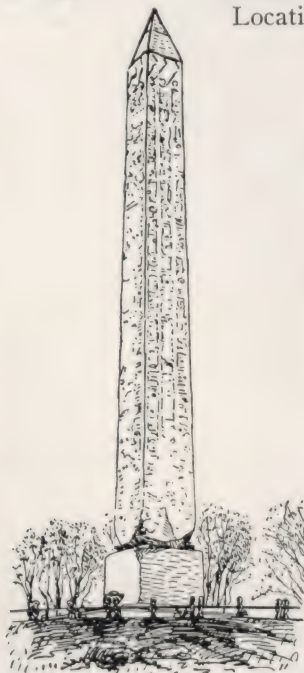
Location of building or monument.



Plymouth Rock
Treated 1921



St. Paul's Chapel, Broadway and Vesey Street,
New York, N. Y.
Restored and preserved in 1930



Egyptian Obelisk in Central Park,
New York, N. Y.
Restored and preserved in 1885



Walker-Lispénard Telephone Exchange of the New York
Telephone Co., New York, N. Y.

SILICA PRODUCTS COMPANY

722 Chestnut Street
ST. LOUIS, MO.

A superior admixture which provides integral waterproof qualities, and improves plasticity, workability, strength and finish of concrete.

Properties of Aquagel

Aquagel is a hydrous silicate of alumina of volcanic origin. In the presence of water it breaks up into particles of colloidal size and forms a gel with twenty-five times its weight of water. Its chemical constituents are practically the same as those found in portland cement. Aquagel contains no soap, caustics, acids or organic matter that might interfere with the setting or cause subsequent disintegration of or injury to concrete or mortar. It does, however, possess mild puzzuolanic properties offsetting to a slight degree the undesirable effects of lime freed from portland cement during its hydration.

Advantages of Aquagel

In manufacturing concrete of any type, it is necessary to form a paste of water and cement sufficient in volume to fill the voids and uniformly coat the particles of aggregate. Due to the difference in specific gravity of the components of concrete, it is necessary to provide a water-cement paste of sufficient viscosity to prevent segregation of the concrete particles. It is the function of Aquagel to supply not only sufficient body to the water-cement paste to prevent segregation, but also to uniformly distribute the cement and coat the aggregate. The purpose of Aquagel, therefore, is to preserve desirable uniformity of the concrete mix, considerably improving the strength, finish and waterproof qualities. The improved workability imparted to the concrete mix by the addition of Aquagel will alone justify its use. Other advantages include lowered labor costs, less form leakage and the elimination of honeycombing and patching.

Tests of Aquagel Concrete

Thousands of tests have consistently shown increased strength with the addition of Aquagel. The following is a typical laboratory test on the effect of Aquagel on strength. Tests by Canadian Insp. & Test. Co., Ltd. Lab. No. T.P. 7788.

	Series A	Series B
Portland Cement	47.0 lbs.	47.0 lbs.
Sand	100.0	100.0
Rock	180.0	180.0
Aquagel	none	1.0
Water	26.0	26.0
Strength (Compressive—lbs. per sq. in.):		
7 days (av.)	1695	2185
28 days	2780	3680
90 days	3365	4005
360 days	4130	4985

Method of Use in Concrete

Aquagel is added to the mix at the same time as the cement. In some localities it may be obtained from the cement mill ground in with the cement. The correct amount of Aquagel to use depends to a considerable extent on the type of concrete. In very rich concrete, designed for high

AQUAGEL

strength, one to two pounds per sack of cement is desirable. With very harsh aggregate, such as cinders, burnt shale, slag or chats, from two to three pounds will be required. In the case of fireproofing concrete, where great plasticity, insulating properties and lightness are desired, as much as 10

pounds per sack may be used. The following specifications for incorporation will give uniformly satisfactory results:

High Stress Concrete and concrete required to be highly resistant to the passage of water—use two pounds of Aquagel to each sack of portland cement.

Harsh Aggregate Concrete—use three pounds of Aquagel to each sack of portland cement.

Fireproofing Concrete—use five pounds of Aquagel to each sack of portland cement.

Method of Use in Masonry Cement

The use of Aquagel is particularly advantageous in mortar, since it has a plasticity value more than five times as great as hydrated lime or any similar material. In other words, one pound of Aquagel contributes as much to plasticity of mortar as five pounds of lime. Aquagel is free from causticity, and therefore presents no dangers due to unhydrated particles; neither does it stain mortar in which it is used, nor destroy mortar colors.

To plasticize a portland cement mortar, use 12 to 15 pounds of Aquagel to each sack of portland cement. The following mortar mix may be made on the job for excellent results as to bond, plasticity and strength:

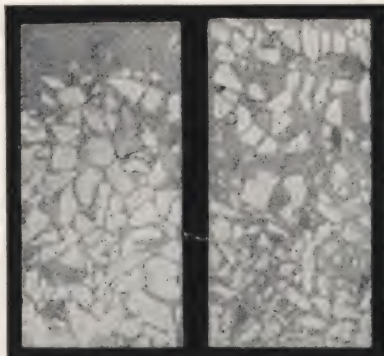
Mortar Sand	1500 lbs.
Inert Filler (limestone dust, ground slag or silica)	300 lbs.
Portland Cement	2 sacks
Aquagel	30 lbs.
Pigment	As required
Water	To desired Consistency

Ready prepared Aquagel Masonry cements may be obtained in many localities from representative portland cement manufacturers.

Jobs Using Aquagel Concrete

The following are important structures using large quantities of Aquagel concrete or Aquagel masonry cement:

Municipal Filtration Plant, Niagara Falls, Canada
St. Joseph Hospital Addition, Toronto, Canada
Municipal Swimming Pool, Hamilton, Canada
Automobile Club of Southern California, Los Angeles, Calif.
Sewage Disposal Plant, Lawton, Okla.
Fairmont Creamery, Guthrie, Okla.
Goodrich Service Building, Portland, Ore.
Walnut Hills High School, Cincinnati, Ohio
Michigan City Generating Station, Michigan City, Ind.
Telephone Building, Louisville, Ky.
Municipal Auditorium, St. Louis, Mo.
Negro Hospital, St. Louis, Mo.
Architectural Building, Washington University, St. Louis, Mo.
Post Office, Torrington, Wyo.
American Smelting & Refining Company, Monterrey, Mexico
Post Office, Harlingen, Tex.
Government Barracks, Duncan Field, San Antonio, Tex.
Mistletoe Creamery, San Antonio, Tex.
School Building, Refugio, Tex.
Chevrolet Motor Car Co., Kansas City
Aquagel concrete structures recently built in Kansas City:
K. C. Southern Railway Elevator, Menorah Hospital, Highway Overpass, Telephone Toll Building, K. C. Bell Telephone Building, Fidelity Vaults, K. C. Power & Light Building, 21 West Eleventh Street Building; Nelson Gallery of Art, K. C. Southern Bridge, Professional Building, Carbide Building, Diarks Building, Ward High School, Municipal Auditorium, Courthouse.



Cross section of normal concrete of exactly same mix except that section on right is of concrete containing 2 lbs. of Aquagel per sack of cement and section on left, no Aquagel

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company
40 Rector Street, NEW YORK, N. Y.

ATLANTA, GA.
BOSTON, MASS.
PITTSBURGH, PA.

CHICAGO, ILL.
CINCINNATI, OHIO
ST. LOUIS, MO.
CHARLOTTE, N. C.

BRANCH SALES OFFICES

CLEVELAND, OHIO
DETROIT, MICH.

HOUSTON, TEX.
INDIANAPOLIS, IND.
SYRACUSE, N. Y.
NEW YORK, N. Y.

KANSAS CITY, MO.
PHILADELPHIA, PA.
HOUSTON, TEX.

SOLVAY CALCIUM CHLORIDE FOR CURING, DENSIFYING AND ACCELERATING THE SETTING OF CONCRETE

The Material

A white, dry, flaky chemical which, when added to the mixing water, accelerates the initial hardening of concrete; at the same time densifies the concrete, making it more waterproof; reduces the freezing point of water, thereby aiding the fresh concrete to resist freezing in low temperatures. Solvay Calcium Chloride is extremely hygroscopic and dissolves almost instantly in water. It can be used with any brand of Portland cement.



the Calcium Chloride curing method also reduces the risk of costly spoilage and damage.

Some Quick Facts—As shown by tests, concrete gauged with Solvay Calcium Chloride has, at the end of 48 hours, the same strength as concrete gauged with plain water at the end of 7 days.

With Solvay Calcium Chloride, floor finishing is possible within a short time after pouring; concrete can be poured late in the afternoon and finished, thus saving overtime charges.

Experiments on workability conducted by the New Hampshire State Highway Department indicate that the power required to mix concrete is reduced 20% by the addition of 2% of Calcium Chloride.

By speeding construction and insuring safety, the Calcium Chloride curing method more than pays for itself.

Data printed in the National Bureau of Standards report show: (1) that all concretes with Calcium Chloride have greater strength than plain concrete at all ages tested. (2) that mortar containing 2% of Calcium Chloride has a strength approximately 15% greater than the plain mortar at one year; that strength at one day is practically doubled by the use of 2% Calcium Chloride.

Advantages

Every condition essential to complete structural concrete curing is met by Solvay Calcium Chloride. Its value over other methods in producing faster, stronger concrete at low cost has been proved in extensive actual practice. Such authoritative bodies as the Portland Cement Association, the Investigating Committee of Architects and Engineers and others have recognized its merits and approved its use.

Construction Advantages—(1) Solvay Calcium Chloride increases the speed of the concrete set; (2) produces high early and ultimate strength; (3) makes the mix more workable; (4) provides proper moisture control for complete hydration; (5) permits earlier removal of forms; (6) offers exceptional control of volume changes.

Safety in Cold Weather—It is here in particular that Solvay Calcium Chloride reveals its superiority. Through its facility for quickening the set, the time ordinarily required is substantially decreased and the danger of freezing thereby greatly lessened. The period during which protection is required is shortened by half. Even in continued cold weather concrete work can progress smoothly and without interruption when Solvay Calcium Chloride serves as the curing agent. Architects, engineers and contractors on many of the country's largest structural projects have been favorably impressed by its qualities of quick initial setting, hardening, densifying and reduction of the freezing point of the mixing water.

Economy—By cutting finishing time and lowering production costs, Solvay Calcium Chloride also insures real, calculable economies. The cost is negligible when all of the advantages of this modern, complete curing method are taken into full consideration. In time saved alone, its use effects important economy. In addition to these savings in valuable time, it should be remembered that



Eaton Tower, Detroit, Mich.
LOUIS KAMPER, INC., Architects
OTTO MISCH CO., Contractors

One of the many magnificent modern structures in which the use of Solvay Calcium Chloride was specified

Tests

Confirmation of these and other practical, "common sense" advantages of the Calcium Chloride curing method has been made in researches by the National Bureau of Standards, by the groups previously mentioned and by other authoritative bodies whose testimony is accepted as competent by architects, engineers and others engaged in construction projects. In all of these findings, it has been determined that these curing benefits extend to all brands of both standard and high early strength Portland cement when calcium chloride is incorporated directly in the mix.

Directions for Using Solvay Calcium Chloride

Amount to be used is approximately 2 lbs., dissolved in the mixing water, per bag of cement according to conditions of temperature, location, mix, etc.

Cost and Shipment

Solvay Calcium Chloride, east of the Mississippi, costs, approximately, two cents per pound—in the far West cost is slightly higher.

Solvay Calcium Chloride is shipped in metal drums containing 400 lbs. net and in moisture-proof bags containing 100 lbs. net. In bags it must be given same care as cement. Stock is carried in 100 cities in the United States. Special arrangements for handling carload lots.

Technical Service

THE SOLVAY PROCESS COMPANY maintains a Technical Service Department whose services are gladly rendered without charge to engineers and architects.

Literature

A comprehensive 32-page booklet, "Solvay Calcium Chloride in Concrete Construction," Architect's Specification Sheet and Report of the Investigating Committee of Architects and Engineers will be sent without charge upon request.



Sears, Roebuck & Co. Building,
Minneapolis, Minn.

HIMMONS CARR & WRIGHT, Architects
B. W. CONSTRUCTION CO., Contractors

Other Typical Buildings

Chicago Tribune Building, Chicago, Ill.
Lincoln Safe Deposit Building, New York, N. Y.
Montreal Rail and Water Terminals
Maccabees Building, Detroit, Mich.
Sesqui-Centennial Stadium, Philadelphia, Pa.
Foshay Tower, Minneapolis, Minn.
Santa Fé Grain Tanks, Argentine, Kan.
Civic Opera Building, Chicago, Ill.
Bankers' Building, Chicago, Ill.
Hearst Publication Plant, New York, N. Y.
Hoffman-La Roche Building, Nutley, N. J.



Denver Bus Terminal of Rocky Mountain Motor Co.

SHANTCLAND & RISTIVE, Engineers
ALEX. SIMPSON CO., General Contractors

L. SONNEBORN SONS, INC.

Guaranteed Quality Waterproofing and Dampproofing Products

88 Lexington Avenue, NEW YORK, N. Y.

BRANCH OFFICES IN PRINCIPAL CITIES

FACTORIES, NUTLEY, N. J.

For Our Page on Floor Preservatives, Technical Paints and Varnishes, see Manufacturers' Index

Hydrocide Exterior Colorless Waterproofing

Description—A clear, colorless liquid composed of water-repellent colloids incorporated in special solvents which are blended in such a manner as to make the product permanently stable in form; permits the ready penetration of the water-proofer into the surface and eliminates discoloration. It differs from liquids incorporating wax, oil or gum compounds in the important fact that Hydrocide Colorless does not leave a sticky or viscous film to invite the accumulation of dust and dirt, and it remains unaffected by temperature changes.

Application—All surfaces to be waterproofed must be clean and absolutely free from moisture to insure thorough absorption. For that reason it is advisable to allow at least three days to elapse after a heavy rain before making an application. It is important that all mortar joints be inspected and wherever necessary, re-pointed and allowed to dry and set thoroughly before Hydrocide Colorless is applied.

Specifications—Brush or spray thoroughly on the exterior wall two (2) coats of Hydrocide Colorless (specify formula) as manufactured by L. SONNEBORN SONS, INC., 88 Lexington Avenue, New York, N. Y.

At least 18 hours should elapse between coats. For exceptionally dense surfaces, one (1) heavy saturation coat may prove sufficient. Hydrocide Colorless must be brought to the job in the original sealed containers. Can be applied by brush or spray.

Special Note: For light colored surfaces of low porosity, two coats of Hydrocide Colorless "G" are recommended; for dark colored stucco, dark colored natural stone and dark colored artificial stone and red brick, two coats of Hydrocide Colorless "B" are recommended. For surfaces of high

porosity, one coat of Hydrocide Colorless "D" is recommended; in exceptional cases two coats are recommended.

Covering Capacity—For two coats, estimate 1½ gals. for each 100 sq. ft.

Kaukit

Description—An airproof, non-shrinking waterproof, plastic caulking compound. It cures to a tough film on the surface, but remains pliable and elastic underneath. It expands and contracts with alternating temperatures.

Kaukit can be used for caulking around window frames and door jambs, glazing steel sash and skylights; sealing and waterproofing cracks and crevices in concrete, stone and brick; waterproofing flashing around chimneys, cornices and coping walls.

Kaukit is made in two consistencies: knife and gun grade. The knife grade is easily applied with a putty knife or hand tool. The gun grade is lighter in consistency and is applied with a caulking gun.

Kaukit is manufactured in Black, White, Natural, Dark Gray, Light Gray, Maroon, Green, Aluminum.

Covering Capacity—One gallon of gun grade is sufficient for caulking about 350 to 500 lineal feet, depending upon the depth of the joint.

One pound of the Kaukit knife grade will cover about 15 to 25 lineal feet, depending upon the depth of the joint.

Specifications—Caulking material shall be Kaukit as manufactured by L. SONNEBORN SONS, INC., 88 Lexington Avenue, New York, N. Y., and applied in accordance with their specifications.

OTHER WATERPROOFING AND DAMPPROOFING PRODUCTS

Hydrocide Integral Paste, Powder and Liquid

Description—These products are recommended for waterproofing mass concrete, concrete walls, floors, cement, stucco and mortars, by incorporation of a permanent water repellent ingredient in the mix.

Specifications—Paste for Portland Cement mixtures about 1 lb. for each bag cement; Paste for cement stucco, plaster and mortar about 1 lb. for each bag of Portland Cement. Where severe conditions prevail, a larger proportion of Paste to each bag of cement may be required.

Powder—About 1 lb. of powder to each bag of Portland Cement.

Liquid—1 qt. to each bag of cement.

Detailed specifications furnished upon request.

Installations—Thousands of installations throughout the country.

Hydrocide Mastic, Semi-Mastic—For Dampproofing and Waterproofing Foundations and Walls Above Grade

Description—These materials are ready for use and require no heating or mixing. They are composed of the finest asphalt reinforced with asbestos fibre and provide a modified membrane system of waterproofing.

Covering Capacity—Hydrocide Mastic, 30 to 40 lbs. for every 100 sq. ft. $\frac{1}{8}$ in. thick. Hydrocide Semi-Mastic, use 1 gal. for every 30 to 40 sq. ft. one heavy coat (two coats recommended). Hydrocide No. 648 Foundation Coating, 1 gal. for every 65 to 100 sq. ft. each coat (two coats recommended).

Specifications—Detailed specifications upon request.

Hydrocide No. 633—A Plasterbond and Dampproofing

Description—A black bituminous compound of highest quality free from coal tar or other adulterants, for application to interior surfaces of exposed exterior walls above grade.

Covering Capacity—1 gal. will cover about 65 to 100 sq. ft., one coat.

Specifications—Furnished on request.

Trimix

Description—For mortar or concrete construction. Accelerator—integral hardener—waterproofer. Trimix is a solution of chemicals containing in colloidal dispersion a siliceous admixture for increasing the efficiency and the workability of mixes.

Specifications—Detailed specifications upon request.

STANDARD WATERPROOFING CORPORATION

Waterproofing and Dampproofing Engineers and Contractors
Manufacturers of Stanwaco Waterproofing Products

TELEPHONE
HARlem 7-3910

1691 Park Avenue, NEW YORK, N. Y.

BRANCH OFFICES IN PRINCIPAL CITIES

Waterproof Products Nos. 1, 2, 3 Transparent

A transparent waterproofing which stops seepage of water and moisture through brick and stone where ordinary waterproofing materials have failed. Does not wash off, mar, crack nor peel. It penetrates every pore. Stanwaco resists heat, cold, rain, and snow. It has been used to waterproof thousands of buildings permanently, economically, and with absolute satisfaction. Applied with either brush or spray.

Laboratory Test of Stanwaco Transparent—An ordinary brick exposed to rain or immersed in a pail of water for 12 hours, gains 6 ounces in weight. The same test made after Stanwaco Transparent Waterproofing is applied to the brick shows no gain in weight. *Water cannot penetrate Stanwaco.*

Grades—Stanwaco is available in the following grades to suit specific requirements:

No. 1—For light colored brick, concrete, stucco, or light stone.

No. 2—For red or other dark colored brick.

No. 3—For very porous surfaces.

Stanwaco No. 4 Asphalt Waterproofing

An asphalt product for waterproofing interior and exterior walls, cellars; for resurfacing and repairing masonry, roofing, wood or metal. Colors: red, green, gray, buff and black.

Stanwaco No. 7 Caulking

An elastic, non-drying caulking compound which will withstand all kinds of weather. Colors: black, gray, red.

Laboratory Test of Stanwaco Caulking Compound—A pat about 2 in. square, $\frac{1}{4}$ in. thick on a steel plate is dried in an oven at 250° F. for 7 hours and then placed while hot in a freezing mixture of ice for 17 hours, repeated for 3 successive days. Stanwaco Caulking Compound will remain plastic and show no sign of loosening, cracking, blistering, or any signs of disintegration.

Stanwaco No. 8 Integral

An integral waterproofing to be mixed in cement. Acts as an anti-freeze and a cement hardener. Is added to mixing water with which it combines immediately, without stirring.

Waterproof concrete—1½ gal. for cu. yd. concrete.

Hard dustless floors—1 gal. for 100 sq. ft.

Waterproof mortar—1 gal. for 800 to 1000 bricks.

Waterproof stucco and plaster—1 gal. for 120 sq. ft.



How Furnished

Stanwaco is furnished in 50, 30 and 5-gal. drums.

Contract Service

We specialize in waterproofing exterior walls above grade. During our 32 years of waterproofing the materials which we have perfected and the experience gained through waterproofing thousands of important buildings have enabled us to succeed even in the most difficult and unusual cases. We do not undertake any work on which we cannot give a positive guarantee against the penetration of water. The mere application of waterproofing materials on a damp or leaky wall is not sufficient. The cause must be determined to avoid continual recurrences.

Although we operate throughout the country, all applications are made by experienced mechanics trained in our service. Quotations for waterproofing work are submitted at reasonably low prices, consistent with our superior workmanship.

Our waterproofing work will stand the following test:

Field Test—In an official test conducted by the Department of Public Works, State of New York, at Brooklyn State Hospital, Creedmor, N. Y., on Building No. 1, the plaster and hollow tiles were removed from a 16-sq. ft. wall, leaving the brick exposed. Then a fire hose was played against the outside of this area. Water appeared in the interior within five minutes. After forty-five minutes the water flowed right through the wall.

We then applied our waterproofing on the same area in accordance with the *Standard Waterproofing Method*. To test our work, a fire hose was placed 15 ft. away from the building and over 50 lbs. of pressure of water was forced against one spot for four hours. *No water or dampness came through.*

National Scope

We accept contracts anywhere in the United States.

"Standard Waterproofing" Is Permanent Insurance—A Written Guarantee with Every Job.

A Few of the Buildings Waterproofed by "Standard" with Stanwaco Waterproofing Products

Thirteen Public Schools, City of New York
East and West End Schools, City of Long Beach, N. Y.
U. S. Government Army Barracks at Fort Slocum, N. Y.
Queens County Savings Bank, Corona, L. I., N. Y.
Ritz Carlton Hotel, Atlantic City, N. J.
Brooklyn State Hospital at Creedmor, L. I., N. Y.
Church of Our Lady of Mount Carmel, Mt. Vernon, N. Y.
New York Furniture Building, New York, N. Y.

And thousands of others.

TOCH BROTHERS INC.

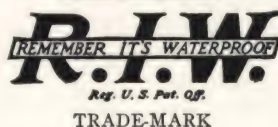
(ESTABLISHED 1848)

Technical Paints, Waterproofing Compounds and Allied Specialties
386 Fourth Avenue
NEW YORK, N. Y.
2600 Federal Street
CHICAGO, ILL.

DISTRIBUTING AGENCIES IN THE WORLD'S PRINCIPAL CITIES

Products

Inventors and manufacturers of STEEL PROTECTIVE PAINTS; DAMP-PROOFING and WATER-PROOFING PAINTS and COMPOUNDS; CAULKING and POINTING COMPOUNDS; MASONRY PAINTS; CONCRETE FLOOR COATINGS; INSULATING PAINTS; SMOKESTACK ACID and ALKALI RESISTING PAINTS; ROOFING PAINT; ENAMELS; STONE BACKING; WOOD FLOOR PRESERVATIVES; MORTAR, CEMENT and PLASTER COLORS; DECORATIVE PAINTS for all purposes.



"R.I.W." Toxmix Colored (Paste Form)—For coloring, hardening, dustproofing and densifying concrete floors. Combines the advantage of an alkali-proof coloring material with a hardening and densifying medium, also possesses great weatherproofing properties. Furnished in various colors.

Damp-proofing

No. 232 "R.I.W." Damp-Resisting Paint—A black, elastic, full-bodied, tacky, damp-proofing and plaster bond paint for brush or spray application to the interior surfaces of exterior masonry walls to which hard wall plaster is to be directly applied. Prevents the penetration of dampness, and renders the inside of walls verminproof and stainproof. Not to be used on ceilings (except under special instructions), nor must concrete or portland cement mortar be applied directly over it.

"R.I.W." Semi-mastic Dampproofing Plasterbond—Similar to No. 232 except that it is a heavier bodied composition for brush application.

"R.I.W." Plastertox—A mastic dampproofing and plasterbond for trowel application, similar to No. 232 except made in the mastic form.

No. 110 "R.I.W." Damp-Resisting Paint—A black, alkali-proof and waterproof, elastic paint to protect limestone, marble, granite and other cut stone from the chemical action and discoloration due to alkali in cement, and to moisture. Also resistant to mild acids.

"R.I.W." Marine Cement—A black, damp-proof, heavy body liquid paint for brush application to the exterior of foundation walls and footings; concrete floor slabs, and wood sleepers laid in concrete. Does not need to be heated.

"R.I.W." Liquid Konkerit (Patented)—Priming and finishing cement paints, ready for use, for damp-proofing, beautifying and overcoming the natural porosity of exposed stucco, concrete and masonry walls. In white and colors. Dries with a flat finish. For gloss finish apply "R.I.W." Flex-Sicco Paint.

"R.I.W." Toxloxpore—A colorless, damp-proofing liquid, especially adapted for application to brick, concrete, stucco, limestone, and Bedford stone. When applied to a perfectly dry surface it will prevent the development of efflorescence and the penetration of dampness.

Caulking and Pointing Compound

"R.I.W." Elastic Caulking Compound furnished in consistency for gun method and knifing use. Colors, gray and caenstone shades.

This compound is a waterproof, elastic, non-staining material for the pointing of terra cotta, stone joints, etc., and for caulking metal or wood doors, frames, etc.

Waterproofing

"R.I.W." Toxement (Patented)—Made in powder, paste and liquid form for the integral waterproofing of all portland cement construction such as concrete foundations, floors, walls, bridges, piers, reservoirs, cement mortar and stucco. It lubricates the concrete, increases flowability and workability with the minimum amount of water, assuring a thorough and non-porous mix and eliminates necessity for extreme tamping and chuting.

"R.I.W." Tox-Mix Clear—A colorless liquid to be used integrally in portland cement mixtures, such as concrete, cement floors, stucco, brick mortar, etc. When this solution is used a great increase is obtained in the early tensile and compressive strength of portland cement mixtures and it renders the resulting concrete or cement mortar permanently hard and dense.

Membrane Method—"R.I.W." Self-Healing Bridge Cement—A black viscous non-hardening material without sulphur content that is unaffected by vibration and which remains elastic at low temperature and will not run in summer. Used in conjunction with 7-oz. untreated burlap or with waterproof felt paper in two or three-ply to give an elastic and effective waterproof membrane.

Concrete and Wood Floor Protective Coatings

"R.I.W." Cement Filler (Transparent) and "R.I.W." Cement Floor Enamel, in Colors (High Gloss)—Designed for use on dry concrete or wood floors. These floor coatings penetrate the pores; neutralize the lime inherent in concrete; harden the surface and prevent cement dusting.

"R.I.W." Toxbro, Wood Floor Preservative and Filler—A light straw colored material for application to wood floors or other wood surfaces, for binding wood fibres together; it also prevents grain of wood from rising and insures a smooth surface, prevents slivering, splintering, cracking and checking.

"R.I.W." Flintox—A chemical solution which reacts with cement and precipitates zinc silicious materials in the pores of concrete. Intended primarily as a surface hardener, but because of the reaction and precipitation referred to, material may be said to function as a binder and dust preventive.

Steel Preservative Paints

"R.I.W." Tockolith (Patented)—A cement basic anticorrosive paint, gray in color, used for priming iron, steel or other metal. A finishing coat must always be applied according to the character of the finished surface required and the nature of the service expected.

No. 1017-A "R.I.W."—An acidproof, alkaliproof and waterproof paint for application to steel or wood. Furnished in black, red, brown, dark green and other colors.

Nos. 110 and 112 "R.I.W." Damp-Resisting Paints—Waterproof paints which have wonderful resistance to the alkalis in cement mortar or concrete. Recommended for finishing coat on structural steel building frames, brine and condenser pipes, etc. Furnished in black and maroon.

No. 137 "R.I.W."—A bright red paint recommended either for interior or exterior use. Used on steel structures exposed to the weather; roofs, gutters, gas holders, tanks, etc., and where acid fumes prevail.

No. 49 "R.I.W." Damp-Resisting Paint—A high grade, exterior exposure paint made in black or dark olive green. Withstands the action of locomotive gases, acids and other fumes to which railroad bridges and viaducts are subjected. Used on tanks, lined smokestacks, etc.

"R.I.W." No. 708 Gray—A gray, flexible, acidproof and waterproof paint for interior or exterior exposure. Resistant to sulphur fumes, ammonia gases and electrolytic corrosion.

Enamels and Wall Coatings

"R.I.W." Hospital and Laboratory Enamel—A waterproof, white, hard usage enamel which resists the action of sulphuretted hydrogen, gases and fumes of acids and other chemicals. Used principally in hospitals, laboratories, bathrooms, kitchens, milk stations, engine rooms, etc.

"R.I.W." Plaster Primer—A liquid coating of semi-opaque character, made in white (can be tinted with color in oil), intended for direct application to clean plastered walls. It overcomes the alkalinity of unpainted plastered walls and obviates the necessity of using sizing materials: i.e., glue size, sealing varnish or similar preparations.

"R.I.W." Machinery and Pipe Enamel—Intended for use on dynamos, transformers, steam and electric stationary engines, compressors, mill and other machinery, guards, rails, etc.

Specialties and Service Department

Our Technical Service Department can be of assistance to our clients where special materials are required or where unusual conditions are to be contended with.

Correspondence and personal inquiry are invited on technical paint and damp-proofing and waterproofing problems.

Complete Specification Folder and Color Cards Available on Request

THE TRUSCON LABORATORIES

Integral Waterproofings, Dampproofings, Floor Hardeners

DETROIT, MICH.

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Products

INTEGRAL WATERPROOFINGS for concrete and portland cement mortars.

DAMPPROOFINGS.

CEMENT FLOOR HARDENERS and PAINTS.

ALKALI-PROOF CEMENT FLOOR PAINT.

ANTI-FREEZE MIXTURES.

For our pages on Paints and Varnishes, see File Index.



Truscon Waterproofing Paste (Integral)

Definition—An integral compound for producing thoroughly waterproof concrete or cement mortar. It is adapted to waterproofing concrete construction of various kinds—foundations, reservoirs, tunnels, dams, cisterns, etc. Also used for waterproofing old brick, concrete and stone structures through the agency of a cement plaster coat into which the waterproofing is introduced. Truscon Waterproofing Paste is also used for producing waterproof cement stucco and cement mortar.

How Used—Truscon Waterproofing Paste is added directly to the mix. To insure proper proportions, a small Measure, or cup, is supplied with each drum of Truscon Waterproofing Paste. This Measure is fastened to the under side of the lid of each container. The directions specify the number of Measures of Truscon Paste to use per bag of cement for each class of work.

Advantages—(1) *Water repellent*; kills capillary absorption of moisture into concrete or cement plaster. Since "plugging the pores" of cement is physically impossible, the repellent feature of Truscon Waterproofing Paste is the most practical and scientific method of waterproofing.

(2) *Easy to use*—added directly to the mix from the drum.

(3) *High concentration and freedom from useless filler*—it is all waterproofing—contains no clay, lime or such material.

(4) *Plasticizes concrete*—and minimizes segregation. Concrete containing Truscon Waterproofing Paste requires less water, hence avoids "sloppy" mixes.

(5) *In paste form*—a form most easily mixed with wet concrete or cement mortar batches. This insures even distribution of the waterproofing.

(6) *Inert*—does not react chemically with cement; hence does not lower the strength of the concrete.

(7) *High concentration*—all waterproofing—hence low cost per yard.

(8) *Contains no soluble salts to rust reinforcing steel.*

(9) *Lubricates the mix* by cutting the "skin strength" of water—producing a concrete which "chutes" easily to the forms; produces a more dense and compact concrete. In the case of cement mortar or stucco, "lubrication" makes these materials of creamy consistency and much easier to apply. Avoids mottling of surface of cement stucco.

(10) *Insoluble in water*—hence can not be washed out of the concrete or affected by time or weathering. This is an important point because so many of the waterproofings on the market will dissolve in water.

(11) *Proved by years of use* in the world's most famous structures.

Specifications for Waterproofing Mass Concrete

Estimate 7 lb. of Truscon Waterproofing Paste (Integral) to the cubic yard of concrete. Applicable to concrete foundations, reservoirs, tunnels, cisterns, swimming pools, etc.

Method—Water tightness shall be secured by the addition of Truscon Waterproofing Paste concentrated, added directly to the mix in the skip; proportions as directed below.

Ingredients and Proportions for Concrete—The concrete composing the structure shall consist of 1 part of cement, 2 parts of sand and 4 parts of stone (1:2:4) properly graded in size from coarse to fine. Add one Truscon Measuring Cup per bag of cement.

Placing—All concrete shall be placed in one continuous operation, each pouring being properly spaded. In cases where joints are unavoidable, care shall be taken to clean and roughen the old surface, and have it thoroughly wet and slush coated immediately before placing additional concrete.

Specifications for Waterproof Cement Plaster Coat

Estimate 6 lb. of Truscon Waterproofing Paste to the 100 sq. ft. of $\frac{3}{4}$ -in. plaster applied to the walls, and 16 lb. of paste to the 100 sq. ft. of 2-in. finish applied to the floor. Applicable to reservoirs, swimming pools, cisterns and similar forms of masonry construction, whether of brick, stone or concrete.

Method—Water-tightness shall be secured by plastering the interior surface of the structure with a continuous coating of portland cement mortar waterproofed with Truscon Waterproofing Paste.

Ingredients and Proportions for Waterproofed Plaster Coat—The mortar composing the plaster coat shall consist of 1 part of cement and 2 parts of clean sand (1:2), free from organic matter and uniformly graded. Truscon Waterproofing Paste shall be added in the proportion of $1\frac{1}{2}$ Truscon "Measuring Cups" to the bag of cement. Then add gauging water and mix thoroughly.

Preparation of Surface to Be Coated—Before plastering the waterproofed cement mortar onto the hardened concrete, brick or masonry, proper precautions should be taken to insure thorough bonding and keying of the plaster coat to the wall.

Application of Coating to Sides—Immediately after applying a slush coat, the waterproofed plaster shall be applied in 2 coats each $\frac{3}{8}$ in. thick as per specifications of the manufacturer, the second coat being applied just before the first has reached its final set.

Application of Floor Coating—Floors shall be prepared and treated with equal care as the walls to insure proper bonding of the mortar, and finished with a waterproofed cement mortar to a thickness of 2 in. Special care must be exercised in joining the wall coating to the floor coating, so that there is a continuous waterproof coating over the entire surface.

Pressure—When moisture is seeping through the walls, proper drainage must be provided during the application and setting of the plaster coat, until such time as the plaster coat has set and is capable of resisting pressure of its own adhesive strength.

Ferritex

Ironite method of Waterproofing—Oilproofing

A pulverous iron compound processed and treated for the "ironite" method of waterproofing. This product is mixed with water and used as a brush coat over concrete surfaces, plugging the pores, thereby preventing the penetration of water or oil.

Ferritex is one of the oldest forms of waterproofing. It is easy to apply and requires very little preparation. Recommended not only as a waterproofing, but also used as an oilproofing. During the War hundreds of concrete oil storage tanks were oilproofed with brush coats of Ferritex.

Specifications for Ferritex

All concrete shall be dampproofed by the application of (1 to 5) thorough brush coats of Truscon Ferritex and water (a porous concrete requires a greater number of brush coats than a dense concrete), as manufactured and recommended by THE TRUSCON LABORATORIES, Detroit, Mich.

Condition of Surface—The surface shall be thoroughly cleaned of dirt, grease and foreign matter.

Application—A practical method of mixing Ferritex with water is to dump 10 lb. of Ferritex in a 10-qt. pail and add just enough water to cover the Ferritex to a depth of about 2 in. The Ferritex stays at the bottom, and in application the brush should be brushed back and forth over this layer of Ferritex under water and then applied to the wall. Use Ferritex freely. Mix only as much Ferritex with water as can be used immediately. Allow 5 or 6 hours in between coats for development, spraying the surface with water frequently in the meantime.

Quantity Required—This depends upon the porosity of the surface, but may be roughly figured at the rate of about 10 lb. to 100 sq. ft.

Stuccotex for Wet Concrete

A hydraulic paint for uniforming concrete and masonry surfaces, or for decorating wet or damp stone, brick or concrete surfaces, such as swimming pools, retaining walls, etc., on which oil paints cannot be successfully used.

Stuccotex is a dry powder which is mixed with water to the right consistency and brushed onto the surface after that surface has been thoroughly saturated with water.

Stuccotex does not flake or crumble off.

Covering Capacity—125 sq. ft. per gal., 2 coats.

Truscon Plaster Bond

A black compound for dampproofing interiors of exposed masonry walls. Plaster Bond remains flexible and tacky, providing a permanent bond for a scratch coat of plaster troweled directly onto it, thus eliminating furring and lathing. Plaster Bond is not recommended for use on ceilings.

Covering Capacity—About 80 sq. ft. per gal., 1 coat.

Truscon Foundation Coat

A black coating furnished ready for use (no heating) for dampproofing masonry walls below grade. Apply with a large mop or brush. More economical and satisfactory than coal tar, or pitch.

Covering Capacity—80 sq. ft. per gal., 1 coat.

Temperite

Quick set and antifreeze for concrete and cement mortar.

Specifications for Using Temperite

Truscon Temperite, manufactured by THE TRUSCON LABORATORIES, Detroit, Mich., shall be used in concrete or cement mortar as directed below:

If Temperite Liquid—Thin in the proportion of 1 gal. liquid to 10 gal. water. Use this mixture of Temperite and water in place of clear water for gauging the mixture of cement and aggregate.

If Temperite Dry Concentrated—Throw 2 lb. of Temperite Dry Concentrated into the mixer for every bag of cement, turning the mixer over a sufficient number of times to insure a thorough solution and distribution of Temperite.

Super-Por-Seal Transparent Dampproofing

An invisible coating for protecting and dampproofing exterior masonry walls above grade. May be applied by brush or spray. Super-Por-Seal is also suitable for use on unexposed sides of cut stone to prevent penetration of moisture and resulting discoloration.

StoneTex Concrete Paint

The nationally known lime-resistant masonry coating for protecting and dampproofing exterior brick, stone, stucco or concrete. Furnished in white and 10 standard shades. Applied with a brush or spray. Prevents cold and moisture from filtering through masonry walls and avoids disintegration of concrete. Renovates and beautifies masonry buildings.

Covering Capacity—About 100 sq. ft. to gal., 2 coats.

Truscon Floor Hardeners

Truscon Ferricon (Metallic)—See Truscon Ferricon next column.

Truscon Art-Roc—Coloring and Hardener (see next column).

Truscon Hurundum—(See next column.)

Metallic—Truscon Floor Hardener is a metallic hardener designed for giving floors in factories, warehouses and such places greater resistance to wear. Forms a dense, hard finish. Especially applicable to new cement floors, or to floors which need resurfacing.

Quantity required: 30 lb. to each 100 sq. ft.

Chemical, Dry—Agatex Crystals, a chemical hardener for cement floors, furnished in dry form. Dissolved in water and applied with a brush or broom.

Quantity required: about 1 lb. to each 50 sq. ft.

Chemical, Liquid—Agatex Liquid, a chemical hardener furnished in highly concentrated form for stopping dusting and crumbling of cement floors. Applied with a brush, broom or similar convenient instrument.

Quantity required: about 1 gal. to each 100 sq. ft.

Ferricon Floor Hardener

A "super" floor hardener of the metallic type—that is, a hardener embodying the full wear-resisting qualities of Truscon Metallic Floor Hardener, together with the new product, Truscon Zilicon. The presence of Zilicon in metallic floor hardener provides a concrete of greater strength and tends to increase its resistance to acid and alkali. Zilicon imparts marked plasticity and workability to the floor topping. Truscon Ferricon produces one of the hardest, toughest and most wear-resisting cement floor surfaces it is possible to obtain.

Quantity required: 30 lb. to the 100 sq. ft. of surface. Dusted on same as regular Truscon Floor Hardener.

Art-Roc

Coloring, Hardener, Waterproofing—This is the new Art-Roc—a combination of coloring, hardener and waterproofing in semi-liquid form, which is mixed with a cement topping for producing a hard, dustless, colored cement surface, but especially applicable to floors. The new Art-Roc contains no calcium chloride.

Art-Roc is a much improved product over the ordinary type of floor hardener and coloring—it is added directly to the batch at the rate of one gallon per sack of cement. This applies to all colors. The colors are clear and bright, due to the incorporation of Zilicon as the basic hardening ingredient.

Colors—Tile Red, Linoleum Brown, French Gray, Buff, Maroon, Spanish Green.

Quantity Required—One gallon of the New Art-Roc per sack of cement. Estimate about 4 gallons for each 100 sq. ft. of 1-in. topping.

Art-Roc Colorless

The same hardening, densifying and waterproofing advantages as described under Art-Roc above, may be obtained with Art-Roc Colorless. Likewise produced in semi-liquid form and added directly to the mix.

Art-Roc Colorless neutralizes the lime content of cement, thereby causing the finish to show greater resistance to the action of mild organic acids. Likewise minimizes the shrinkage which normally occurs in the contraction of the colloid of the cement.

Quantity Required—One quart per sack of cement. Estimate about one gallon of Art-Roc Colorless per 100 sq. ft. of 1-in. topping.

Hurundum Floor Hardener (Non-Slip and Non-Rusting)

Hurundum is a dry material which is dusted over the cement finish just before final troweling, exactly in the same way that ordinary Metallic Floor Hardener is used. Hurundum differs considerably from Metallic Floor Hardener, however, in that the material is slip-proof and rustproof. This is because Hurundum contains no free iron, but is composed of properly graded particles of fused aggregates. These aggregates are much harder than iron—so hard they will scratch glass.

Because it is rustproof, it may be used on outdoor floors, or indoor floors subjected to frequent wetting. Because of the texture of the Hurundum aggregate, a Hurundum finished floor is practically a slip-proof floor.

Colors—Green, Red, Buff, Brown, Natural.

Quantity Required—From 30 to 40 lbs. per 100 sq. ft.

Alchemik Concrete Floor Coating

Especially designed for coating interior basement concrete floors, or concrete floors laid directly on the ground. Not affected by moisture or alkali. This material is not to be confused with ordinary oleo-resinous floor paints. Contains no vegetable oils—instead is developed out of pure refined rubber, which accounts for its immunity to alkali in concrete. Covers about 20% more surface than oleo-resinous floor paints—hard, scuffproof, very adhesive. Quick drying.

Colors—Stone Gray, Concrete Gray, Linoleum Brown, Tile Red, Black, White, Clear—also bright Green, Orange and Blue.

THE TREMCO MANUFACTURING CO.

Caulking, Pointing, Glazing Plastics; Mastic Flooring; Waterproofings and Paints

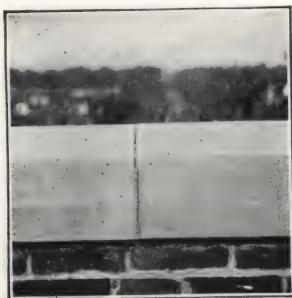
393 East 131st Street, CLEVELAND, OHIO

REPRESENTATIVES IN PRINCIPAL CITIES

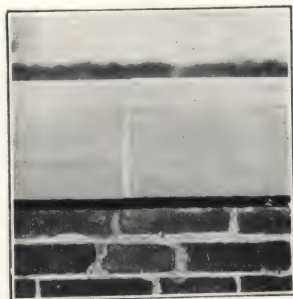
CANADA: The Tremco Manufacturing Co. (Canada) Limited, LEASIDE (TORONTO), ONT.

Tremco Stainless Caulking and Pointing Compound

A non-staining plastic compound, non-sagging in the deepest joint, non-hardening. Adheres tightly to metal, wood and masonry forming a weatherproof expansion joint. Consistencies for hand gun, pressure gun, or pointing tool. Colors are Stone, Gray, Aluminum, Red, Green, Chocolate Brown, Black, or special colors where specified.



Mortar Joint



Tremco Joint

Tremco Approved Contractors for caulking are located in the principal cities of the United States and Canada.

Where Specifications Should Call for Mastic—(1) Around head, jambs and sill of wood and metal window and door frames set into masonry; to preserve the frames and seal out moisture, soot and dirt, and cold draughts. (2) All joints in cornices, copings, curbs, projecting courses, steps, washes, belts, etc. Top beds of all moulded courses should be pointed with mastic to prevent spalling off of moulded members and the hard mortar joint should not be brought out beyond the weight bearing surface of the stone. The purpose of this type of specification is to maintain watertight joints in exterior masonry, to relieve stresses and provide for expansion and contraction in order to eliminate spalling of stonework, to throw the weight of stone and terra cotta courses back on the weight bearing surfaces and to reduce maintenance costs for repointing a few years after completion of the job.

Specifications also call for mastic in *pressure relieving joints*; for the bedding of coping stones; in *sheet metal and roofing specifications* for sealing grooves and reglets in metal coverings and flashings, metal wall coverings, gutter linings, roof lights, etc.; in *interior stone, structural glass and tile work specifications* for joints in structural glass and joints between such interior work and ornamental metal work of every variety; the *bedding* of metal window and door frames when erected with a special plastic called Tremco Casement Bedding Compound; the bedding of water bars in wood frames; and the bedding of leaded glass in stone reglets with a special mastic called Tremco 415 Art Glass Bedding Compound. Complete detailed specifications available to architects upon request.

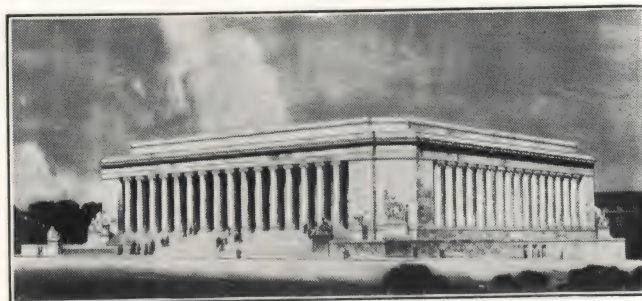
Tremco Elastic Glazing Compound

Applied exactly like putty but never dries out hard or brittle, adheres tightly to glass, metal or wood, takes up expansion and contraction and absorbs vibration, and is unaffected by gases, steam, water, fumes, etc. Eliminates all difficulties commonly encountered through the use of putty. Made in 6 colors. Easily applied by professional glaziers.

TREMCO

Tremco Specification Service to Architects

Detailed information for use in writing specifications available without obligation through experienced Tremco Representatives and Tremco Approved Contractors located in many of the principal centers of the United States and Canada. *Complete Tremco Architectural Specifications on waterproofing, caulking, pointing, painting,*



Mellon Institute Building, Pittsburgh, Pa.

JANSSEN & COCKEN, Architects
MELLON STUART CO., Contractors
ALEX HOWIE, INC., Stone Setting

Mastic Pointing with Tremco Caulking and Pointing Compound

etc., available in catalogue form upon request. Specifications also available on the following materials:

Tremco 141 Invisible Dampproofing—Seals porosity of masonry without changing the texture or appearance of even the lightest stone work.

Tremco 101 Plastic Dampproofing—Unexcelled protection for backs of parapet walls, fire walls, tops of cast stone coping stones and sills, and for bedding coping stones and sills. In colors.

Tremco Mulsomastic Industrial Flooring—Cold applied, waterproof flooring for even the most severe conditions. Applied from 1/4 to 1/2-in. thickness. Light in weight. Excellent for leveling prior to the application of decorative tile.

Penetrem Floor Treatment—Lowest cost per square foot per year treatment for wood, linoleum or concrete floors. Also used for decorative tile. Non-slippery, durable, waterproof.

Tremco 202 Ceiling Plaster Bond—Used instead of scratch coat to bond plaster tightly to smooth concrete ceilings.

Cretemix "A"—Concrete densifier, accelerator and antifreeze.

Cretemix "B"—Integral waterproofing powder or paste.

Kemi-Kote—Liquid or crystals for hardening concrete floors.

Tremco Foundation Coatings and Plaster Bond Dampproofings—For every dampproofing condition, including membrane waterproofing, spandrel beam waterproofing, etc.

A Few Important Installations of Tremco Materials During the Past Year

St. John the Divine Cathedral, New York, N. Y.—*Art Glass Bedding*

Department of Interior Building, Washington, D. C.—*Pointing*

East Liberty Presbyterian Church, Pittsburgh, Pa.—*Pointing, Caulking and Art Glass Bedding*

Chrysler Building, New York, N. Y.—*Mastic Pointing*

Heinz Memorial Chapel, Pittsburgh, Pa.—*Pointing and Caulking*

Archives Building—Washington, D. C.—*Pointing*

Ruggles Street Baptist Church, Boston, Mass.—*Pointing*

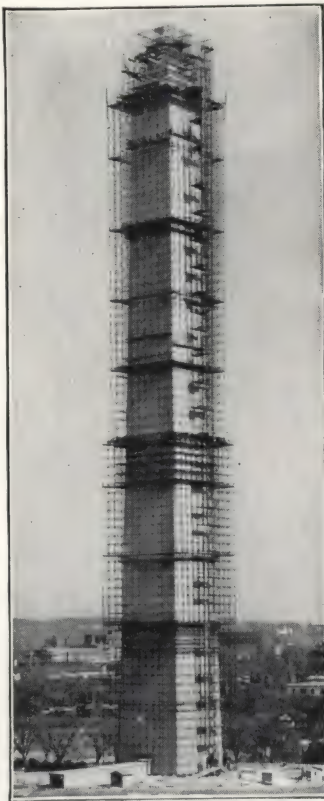
New Firestone Rubber Enameled Steel Buildings, Hartford and Bridgeport, Conn.—*Pointing*

Baltimore City Hospital, Baltimore, Md.—*Casement Bedding*

Oneida Community, Ltd., Oneida, N. Y.—*Glazing Glass*

Clark Grave Vault Company, Columbus, Ohio—*Glazing Glass*

Power Plant, University of Minnesota, Minneapolis, Minn.—*Glazing Glass*



Washington Monument, Washington, D. C.

Mastic Pointing with Tremco Caulking and Pointing Compound

By

ALEXANDER HOWIE, INC., Contractors

THE VORTEX MANUFACTURING CO.

Gun Applied Dampproofing and Plaster Key

1978 West 77th Street, CLEVELAND, OHIO

APPLIED BY PAR-LOCK APPLIERS IN

ALBANY, N. Y. BUFFALO, N. Y. CINCINNATI, OHIO MILWAUKEE, WIS. NEW YORK, N. Y. ST. LOUIS, MO. TORONTO, ONT.
ATLANTA, GA. CHICAGO, ILL. CLEVELAND, OHIO MINNEAPOLIS, MINN. PHILADELPHIA, PA. SCRANTON, PA. TRENTON, N. J.
BALTIMORE, MD. DETROIT, MICH. PITTSBURGH, PA. WILKES-BARRE, PA.

STANDARDIZED NATIONAL SERVICE BY PAR-LOCK APPLIERS

THE VORTEX MANUFACTURING CO., owner of the Dens-tect Process, furnishes equipment especially designed for application, and manufactures all asphalt materials. The Par-Lock Appliers operate under agreement with THE VORTEX MANUFACTURING CO., insuring application in accordance with proven specifications, the result of experience on a wide variety of work covering thousands of applications throughout the whole country, during a period of fifteen years.

Materials—The asphalt compounds used are blended under strict supervision to produce the specific physical qualities necessary to meet the requirements of each type of service.

All asphalt is applied through equipment especially designed to handle heavy bodied asphalts, insuring greater protection. Exclusive devices have been developed for use in conjunction with the asphalt gun for the application of the various specifications.



Complete Service by Par-Lock Appliers—Par-Lock Appliers, with carefully prepared and tested materials, with specially designed equipment and experienced operatives under supervision of trained engineers, render complete service on all types of dampproofing and waterproofing required in building construction, including the following:

Dampproofing of masonry walls to be plastered direct.
Dampproofing back of furring.
Spandrel beam waterproofing.
Membrane waterproofing for basement walls, floor footings, etc.
Foundation waterproofing for exteriors below grade.
Dampproofing surfaces to be finished with portland cement or tile.
Dampproofing walls to be insulated with corkboard.
Gun-applied protective coatings on cold storage interiors.

Descriptive Literature, Specifications, Data—Write to THE VORTEX MANUFACTURING CO., 1978 West 77th Street, Cleveland, Ohio, or any Par-Lock Applier.

Dens-tect Specification for Interior of Exterior Walls

Dens-tect Treatment—

Provides an impervious coating of tangible thickness. Recommended for interior of exterior masonry walls and other masonry surfaces where a higher degree of dampproofing than afforded by regular Par-Lock Plaster Key is required.

Dens-tect Is Applied by Special Air Gun—The Dens-tect application comprises a heavy gun-applied priming coat of asphalt followed by a coating of asphalt and finely graded aggregate thoroughly mixed at the nozzle.

Introduction of the aggregate into the asphalt at high velocity and at right angles to the surface drives it into all minor cracks and crevices common to all masonry, and builds up a heavy, uniform thickness of mastic coating, from six to eight times the thickness of film dampproofing.

Advantages of Dens-tect Wall Treatment—(1) Provides an effective check against wall leakage by filling voids and offering a continuous coating over wall surface.

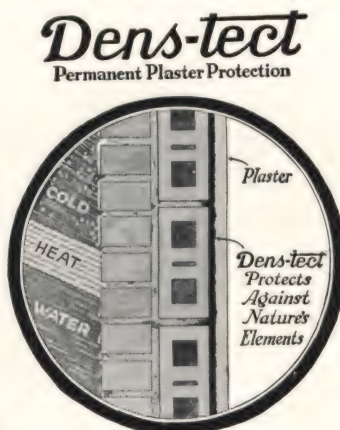
(2) It supplants furring, saving cost and floor space and eliminates ceiling and floor troubles resulting from moisture which is absorbed through outer wall and transmitted to floor slab from space between wall and inside of furring.

(3) Provides a uniform plaster base, overcoming irregular suction in masonry and insuring uniform quality of plaster-finish and permanence of decoration. Roughened surface formed by aggregate, together with manner in which application follows contour of wall, provides ample bonding properties.

Dens-tect Specification—The interior of all exterior walls above grade shall be treated in accordance with the Dens-tect specification of THE VORTEX MANUFACTURING CO., Cleveland, Ohio.

Surfaces receiving Dens-tect are to be turned over to Par-Lock Applier clean and free from dirt, oil and other foreign matter, with all large projections removed and all holes and masonry joints pointed up in a workmanlike manner, in proper condition to receive Dens-tect application.

Note: All plastering materials are recommended for use, over this specification, except plasters made of portland cement mortar or putty gauged with portland cement.



Par-Lock Plaster Key for Surfaces to Be Plastered Direct

Par-Lock Treatment—The

Par-Lock
The Master Plaster Key



Par-Lock Plaster Key is a nationally used and approved treatment which dampproofs and at the same time forms a plaster key or bond for ceiling and wall surfaces to be plastered direct.

Par-Lock treatment consists of multiple coats of specially blended pure asphalt, gun-applied under high pressures, and a final coat of special graded grit which is likewise mechanically applied to the final coat, providing a positive key of definite strength.

Par-Lock Insures Permanent Plastering—The Par-Lock Plaster Key in-

sure permanent plastering by:

- (1) Dampproofing the structural surface back of the plaster.
- (2) Providing a key or clutch with a strength many times in excess of the requirements imposed by the weight of the plaster.
- (3) Preventing the breakdown of the plaster crystal by reactions which many times result from contact between the structural surface and the plaster.
- (4) Adjusting the difference in expansion and contraction between the plaster material and the structural surface.
- (5) Overcoming insufficient, excessive or irregular suction in the structural body.

Recommended Applications of Par-Lock Plaster Key—Par-Lock is recommended as preparation for the following surfaces when plastered direct:

- (1) Concrete ceilings.
- (2) Tile and concrete joist ceilings.
- (3) Concrete beams, columns and stair soffits.
- (4) Interior of exterior walls.

Plaster Key Specification—All (architect to indicate surfaces here) within the building receiving plaster finish direct are to be prepared for plastering according to Plaster Key Specification of THE VORTEX MANUFACTURING CO., Cleveland, Ohio.

Surfaces receiving Par-Lock are to be turned over to Par-Lock Applier clean and free from dirt, oil and other foreign matter and with all large projections removed and all holes and masonry joints pointed up in a workmanlike manner, in proper condition to receive Par-Lock application.

Note: Any plastering materials may be used over this specification, except plasters made of portland cement mortar or putty gauged with portland cement.

MEMORANDA

**STRUCTURAL
STEEL AND IRON**
- SECTION -

5

CATALOGS 1 to 9

MEMORANDA

McCLINTIC-MARSHALL CORPORATION

SUBSIDIARY OF BETHLEHEM STEEL CORPORATION

Steel Construction

BETHLEHEM, PA.

DISTRICT OFFICES

NEW YORK, N. Y., 25 Broadway
PHILADELPHIA, PA., Broad Street Station Building
PITTSBURGH, PA., Oliver Building

BOSTON, MASS., 75 Federal Street
BUFFALO, N. Y., Bell and Abby Streets
BALTIMORE, MD., Mercantile Trust Building
CHICAGO, ILL., Wrigley Building

DETROIT, MICH., General Motors Building
ST. LOUIS, MO., Telephone Building
CINCINNATI, OHIO, Union Trust Building
CLEVELAND, OHIO, Terminal Tower

PACIFIC COAST STEEL CORPORATION

SAN FRANCISCO, CALIF., 20th and Illinois Streets
LOS ANGELES, CALIF., Slauson Avenue

SEATTLE, WASH., West Andover Street
SALT LAKE CITY, UTAH, Kearns Building

PORTLAND, ORE., American Bank Building
HONOLULU, T. H., Schuman Building

EXPORT DISTRIBUTOR: Bethlehem Steel Export Corporation, 25 Broadway, New York, N. Y.



Marin Tower, Golden Gate Bridge,
San Francisco, Calif.

Golden Gate Bridge and Highway District,
JOSEPH B. STRAUSS, Chief Engineer
Steel construction by McClintic Marshall

STEEL BRIDGES AND BUILDINGS



United States Supreme Court Building, Washington, D. C.

CASS GILBERT, INC., Architects; GUNVALD AUS Co., Engineers; GEORGE A. FULLER Co.,
General Contractors
Steel framework by McClintic-Marshall



Columbia University Library, New York, N. Y.

JAMES GAMBLE ROGERS, INC., Architects; GUNVALD AUS Co., Engineers; MARC EIDLITZ & SON, INC.,
General Contractors
Steel framework by McClintic-Marshall

BETHLEHEM STEEL COMPANY

GENERAL OFFICES
BETHLEHEM, PA.

DISTRICT OFFICES

ATLANTA
BALTIMORE
BOSTON

BRIDGEPORT
BUFFALO
CHICAGO

CINCINNATI
CLEVELAND
DALLAS
DETROIT

HOUSTON
INDIANAPOLIS
KANSAS CITY

MILWAUKEE
NEW YORK
PHILADELPHIA
PITTSBURGH

ST. LOUIS
ST. PAUL
SAN ANTONIO

WASHINGTON
WILKES-BARRE
YORK

PACIFIC COAST DISTRIBUTOR: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Seattle, Portland, Salt Lake City and Honolulu
EXPORT DISTRIBUTOR: Bethlehem Steel Export Corporation, 25 Broadway, New York, N. Y.

Products

BETHLEHEM WIDE-FLANGE STRUCTURAL SHAPES, including Beams, Girder Beams and Columns.

Also a full line of Standard Structural Shapes, including Beams, Channels and Angles.



BETHLEHEM LIGHT SECTIONS, including Beams, Columns, Joists and Stanchions.

For page on Beth-Cu-Loy Sheets, see File Index.

BETHLEHEM STRUCTURAL SHAPES

Uses

Bethlehem Wide-Flange Shapes are used in all sizes of buildings and bridges. Light Beams and Joists are used especially for floor construction in buildings designed for lighter floor loads; also in the roof construction of all types of buildings. Stanchions are used as columns or posts in connection with Bethlehem

Light Beams and Joists and other structural Shapes.

Advantages

Bethlehem Wide-Flange Structural Shapes are rolled from high grade structural steel on Bethlehem's Grey Mills. These sections combine the advantages of light weight with economy in fabrication.

BETHLEHEM WIDE-FLANGE SHAPES, INCLUDING LIGHT BEAMS, JOISTS, COLUMNS AND STANCHIONS SHOWING NOMINAL DIMENSIONS, WEIGHT AND SECTION MODULUS

*Section No.	Weight per ft., lb.	Section modulus, in. ³	*Section No.	Weight per ft., lb.	Section modulus, in. ³	*Section No.	Weight per ft., lb.	Section modulus, in. ³	*Section No.	Weight per ft., lb.	Section modulus, in. ³	*Section No.	Weight per ft., lb.	Section modulus, in. ³
B36a 36"x16½"	300	1105.1	B24b 24"x14"	160	413.5	B16b 16"x11½"	114	197.4	B14f 14"x14½"	320	492.8	B12a 12"x8"	50	64.7
	280	1031.2		150	385.5		105	181.7		136	216.0		45	58.2
	260	951.1		140	358.6		96	166.1		127	202.0		40	51.9
	250	911.7		130	330.7		88	151.3		119	189.4		36	45.9
	240	873.6		120	299.1		78	127.8		111	176.3		32	40.7
B36 36"x12"	230	835.5	B24a 24"x12"	110	274.4	B16a 16"x8½"	71	115.9	B14e 14"x12"	103	163.6	B12 12"x6½"	28	35.6
	194	663.6		100	248.9		64	104.2		95	150.6		25	30.9
	182	621.2		97	220.9		58	94.1		87	138.1		136	154.4
	170	579.1		87	204.3		45	72.4		84	130.9		124	139.9
	160	541.0		80	185.8	B16 16"x7"	40	64.4		78	121.1		112	126.3
B33a 33"x15¾"	150	502.9	B24 24"x9"	74	170.4		36	56.3		74	112.3		100	112.4
	240	811.1		142	317.2		426	707.4	B14b 14"x10"	68	103.0	B10b 10"x10"	89	99.7
	220	740.6		132	294.8		412	682.1		61	92.2		77	86.1
	210	704.4		122	272.5		398	656.9		58	85.0		72	80.1
	200	669.6		112	249.6		384	632.2		53	77.8		66	73.7
B33 33"x11½"	152	486.4	B21b 21"x13"	103	213.1	B14e 14"x16"	370	608.1	B14a 14"x8"	48	70.2	B10a 10"x8"	60	67.1
	141	446.8		96	197.6		356	583.6		43	62.7		54	60.4
	132	413.7		89	182.8		342	559.4		42	60.7		49	54.6
	125	385.1		82	168.0		328	535.8		38	54.6		45	49.1
	210	649.9		73	150.7		314	511.9	B14 14"x6¾"	34	48.5		41	44.5
B30a 30"x15"	200	617.6	B21a 21"x9"	68	139.9	B14e 14"x16"	300	488.2		30	41.8	B10 10"x5¾"	37	39.9
	190	586.1		63	128.0		287	465.5		190	263.2		33	35.0
	180	555.2		59	119.3		264	427.4		176	242.6		29	30.8
	172	528.2		124	239.0		255	412.0		161	222.2		26	27.6
	132	379.7		114	220.1		246	397.4	B12c 12"x12"	147	201.8		23	24.1
B30 30"x10½"	124	354.6	B18b 18"x11¾"	105	202.2		237	382.2		133	182.5		21	21.5
	116	327.9		96	184.4		228	367.8		120	163.4	B8b 8"x8"	67	60.4
	108	299.2		85	156.1		219	352.6		106	144.5		58	52.0
	177	492.8		77	141.7		211	339.2		99	134.7		48	43.2
	163	452.9		70	128.2	B18a 18"x8¾"	202	324.9		92	125.0		40	35.5
B27a 27"x14"	154	427.8	B18 18"x7½"	64	117.0		193	310.0	B12b 12"x10"	85	115.7		35	31.1
	145	402.9		55	98.2		184	295.8		79	107.1		33	29.3
	144	299.2		50	89.0		176	281.9		72	97.5	B8a 8"x6½"	31	27.4
	106	277.2		47	82.3		167	267.3		65	88.0		27	23.4
	98	255.3					158	253.4		64	85.8		24	20.8
B27 27"x10"	91	233.2					150	240.2		58	78.1	B8 8"x5¼"	21	18.0
							142	226.7		53	70.7		19	16.0
													17	14.1

*Dimensions following section number are nominal over-all height and width of flange, respectively.

BETHLEHEM LIGHT SECTIONS

Beams, columns, joists and stanchions, rolled exclusively from open hearth steel, structural grade, to essentially the same shapes as the heavier wide-flange sections.

For nominal dimensions, weights, and section modulus of Bethlehem Light Sections, see preceding page.

Although light in weight for their depths, Bethlehem Light Sections have sufficient thickness of metal in both flange and web to make them suitable for use in first class construction, and within the requirements of the building laws of large cities.

In the accompanying tables are given the properties, dimensions, and allowable loads for Bethlehem light-weight beams, light-weight columns and joists.

LIGHT BEAMS AND JOISTS

Allowable Uniform Loads in Kips for Beams Laterally Supported
(For beams laterally unsupported, allowable loads must be reduced)

Span, ft.	Nominal Depth and Width—Weight per Foot													
	12x4				10x4				8x4			6x4		
	22	19	16½	14	19	17	15	11.5	15	13	10	16	12	8.5
2							55.2	42.6	47.7	44.2	32.3		33.1	23.8
3	76.8	70.0	66.2	57.2	61.5	58.3	55.0	42.0	47.3	39.5	31.2	39.0	29.0	20.3
4	75.9	64.2	52.6	44.4	56.3	48.5	41.3	31.5	35.5	29.7	23.4	30.5	21.7	15.2
5	60.7	51.4	42.1	35.5	45.1	38.8	33.0	25.2	28.4	23.7	18.7	24.4	17.4	12.2
6	50.6	42.8	35.1	29.6	37.6	32.3	27.5	21.0	23.7	19.8	15.6	20.3	14.5	10.1
7	43.4	36.7	30.1	25.4	32.2	27.7	23.6	18.0	20.3	16.9	13.4	17.4	12.4	8.7
8	38.0	32.1	26.3	22.2	28.2	24.3	20.6	15.8	17.7	14.8	11.7	15.2	10.9	7.6
9	33.7	28.5	23.4	19.7	25.0	21.6	18.3	14.0	15.8	13.2	10.4	13.5	9.7	6.8
10	30.4	25.7	21.1	17.8	22.5	19.4	16.5	12.6	14.2	11.9	9.3	12.2	8.7	6.1
11	27.6	23.3	19.1	16.1	20.5	17.6	15.0	11.5	12.9	10.8	8.5	11.1	7.9	5.5
12	25.3	21.4	17.5	14.8	18.8	16.2	13.8	10.5	11.8	9.9	7.8	10.2	7.2	5.1
13	23.4	19.8	16.2	13.7	17.3	14.9	12.7	9.7	10.9	9.1	7.2	9.4	6.7	4.7
14	21.7	18.3	15.0	12.7	16.1	13.9	11.8	9.0	10.1	8.5	6.7	8.7		
15	20.2	17.1	14.0	11.8	15.0	12.9	11.0	8.4	9.5	7.9	6.2			
16	19.0	16.1	13.2	11.1	14.1	12.1	10.3	7.9	8.9	7.4	5.8			
17	17.9	15.1	12.4	10.4	13.3	11.4	9.7	7.4	8.3	7.0	5.5			
18	16.9	14.3	11.7	9.9	12.5	10.8	9.2	7.0						
19	16.0	13.5	11.1	9.3	11.9	10.2	8.7	6.6						
20	15.2	12.8	10.5	8.9	11.3	9.7	8.3	6.3						
21	14.5	12.2	10.0	8.5	10.7	9.2								
22	13.8	11.7	9.6	8.1										
23	13.2	11.2	9.2	7.7										
24	12.7	10.7	8.8	7.4										
25	12.1													

LIGHT COLUMNS

Allowable Concentric Loads in Kips

Unbraced length, ft.	Nominal Depth and Width—Weight per Foot											
	6x6				5x5				6x4		4x4	
	41	30	27	23	20	18	15.5	18.9	16	12	13	10
4	181	132	119	101	88	79	69	82	71	53	57	44
5	181	132	119	101	88	79	69	82	70	51	57	43
6	181	132	119	101	88	79	69	82	65	47	53	40
7	181	132	119	101	88	79	69	77	60	43	49	37
8	180	131	117	100	87	76	66	73	55	39	45	34
9	172	125	112	95	83	72	63	68	50	35	41	31
10	165	119	107	91	78	69	59	63	45	32	38	29
11	157	113	101	86	74	65	56	59	41	29	35	26
12	149	108	96	82	70	61	53	55	38	26	32	24
13	141	102	91	77	67	58	49	51	34	24	29	22
14	134	96	86	73	63	54	46	47	31	22	26	20
15	127	91	81	69	59	51	44	44	29	20	24	18
16	120	86	77	65	56	48	41	41	26		22	17
17	113	81	72	61	53	45	38	38				
18	107	77	68	58	50	42	36	35				
19	101	73	64	54	47	40	34	33				
20	96	69	61	51	44	37	32	31				
21	90	65	57	49	42	35	30					
22	86	61	54	46	39	33	28					
23	81	58	51	43	37	31	27					
24	77	55	48	41	35	29						
25	73	52	46	39	33							
26	69	49										

Safe load values given above the upper heavy lines are for ratios of l/r not over 60, those between the heavy lines are for ratios from 61 to 120, and those below the lower heavy lines are for ratios from 121 to 200.



Residence, Bethlehem, Pa.

C. M. LOVELACE and OTTO SPILLMAN, Architects and Engineers
F. F. SPECK CONSTRUCTION CO., General Contractors
BETHLEHEM FABRICATORS, INC., Fabricators

Uses of Light Sections

These light sections supplement the heavier Bethlehem Wide-Flange Structural Shapes, and as such afford architects and engineers greater latitude in working out economical designs.

Bethlehem Light Sections are finding wide application in the construction of apartment houses, school buildings, hospitals, hotels and similar structures having relatively light live loads.

Economies

The use of Bethlehem Light Sections effects definite economies. In floors, Bethlehem Light Sections, of depth sufficient to provide the requisite rigidity, can be set close enough together to keep the floor slab thickness within economical limits without using a greater weight of steel than is needed to carry the load.

Similar savings are obtained through the use of Bethlehem Light Sections as purlins in roof construction, as columns in upper stories where loads are lighter, as struts between columns—in fact, wherever it is desirable to combine rigidity with relatively close spacing of the structural members in floors and roofs.



Y. M. C. A., Wilkes-Barre, Pa.

T. A. FOSTER, Architect
ANTHRACITE BRIDGE CO., Engineers and Fabricators
A. J. SORDONI, General Contractor
W. C. SHEPHERD, Building Counsellor

Other Advantages

In addition to economy, Bethlehem Light Sections have the following advantages:

The light structural joists together with stanchions, forming an integral part of the steel frame, offer economy in design without loss in rigidity.

They are erected in the same manner as the heavier sections comprising the steel framework, and therefore can be handled by the same contractor or fabricator who has the complete job.

Wherever thicker floor slabs are desired, Bethlehem Light Sections can be also used to advantage, because the inherent strength of the sections permits greater spacing, than with other types of light sections.

In summing up these advantages it is apparent that the wide range of Bethlehem Light Sections will greatly simplify the problem of working out economical designs for structural steel.



Monastery Building, Villanova College, Villanova, Pa.

DAGIT & SON, Architects
W. BISHOP SCHUYLER, Engineer
HENRY E. BATON, INC., General Contractors
SHOEMAKER BRIDGE CO., Fabricators



Garage, Lenoxville, Pa.

DEAN JOHNSON, Owner and Designer
J. F. BRANDT, Chief Engineer of Anthracite Bridge Co., Engineer for steel work

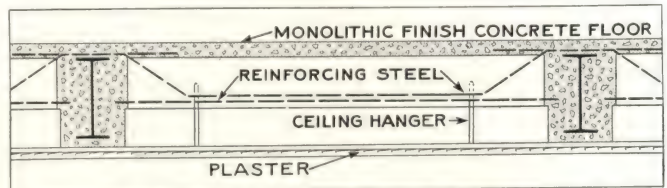


Public Works Office Building, Boston, Mass.

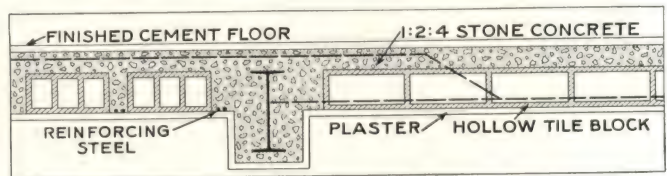
EDWARD T. P. GRAHAM, Architect
E. A. TUCKER, Engineer
GEO. B. H. MACOMBER CO., General Contractors
LEHIGH STRUCTURAL STEEL CO., Fabricators

Floor Construction

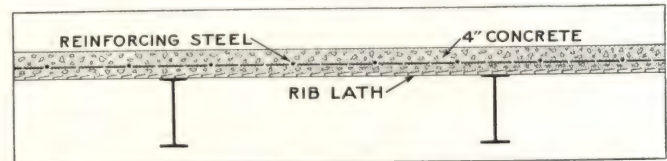
Many different types of floor construction are used in steel buildings. Of the more popular systems, four general types are illustrated below.



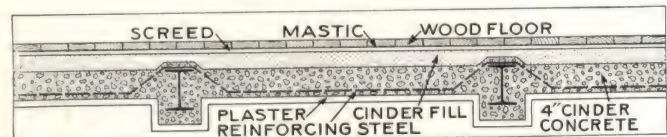
Floor Section Used in Public Works Office Building, Boston, Mass.



Type of Floor Construction Used in Century Apartments, New York, N. Y.



In the Structure of Garage, Lenoxville, Pa., This Type of Floor Construction Was Used



Section of Flooring Used in Knickerbocker Village, New York, N. Y.

In any case, Bethlehem light-weight beams are used in an identical manner with the heavier wide-flange shapes, and usually with relatively wide spacing.

The size and shape of these light beams affords such stability that the necessity for cross bracing or bridging is minimized. Where the spans are unusually long and the lateral movement is apt to overcome the rigidity of the bracing ordinarily provided by the concrete floor slabs, special bridging is recommended.

In using Bethlehem Light Sections in steel-concrete floor construction and by spacing them and spanning them to their capacity, only the minimum amount of



Race Track Grand Stand, Houston, Tex.

FUNK & WILCOX Co., Architects; MARK LINENTHAL, Engineer; STANDARD CONSTRUCTION Co., Houston, General Contractors; McCLINTIC-MARSHALL Corp., Fabricators

steel need be used. In combination with careful selection of the other necessary materials—steel lath, reinforcing steel, gypsum or concrete slabs—surprising economies in the cost of materials and labor can be effected.

**Century Apartments,
New York, N. Y.**
OFFICE of IRVIN S. CHANIN,
Architect
ALEXANDER D. CROSETT,
Engineer
CHANIN CONSTRUCTION Co.,
Inc., General Contractors
McCLINTIC-MARSHALL Corp.,
Fabricators



School for Colored Handicapped Children, Baltimore, Md.

WM. F. STONE, JR., Architect; VAN R. P. SAXE, Engineer; P. C. STREETE ENGINEERING Co., General Contractors; LEHIGH STRUCTURAL STEEL Co., Fabricators



Knickerbocker Village, New York, N. Y.

JOHN S. VAN WART, Architect; ALEXANDER D. CROSETT, Engineer; FRED F. FRENCH COMPANY, General Contractors; HARRIS STRUCTURAL STEEL Co., Fabricators

CORKANSTELE COMPANY

Engineers and Builders of Corkanstele Building Construction
270 Madison Avenue, NEW YORK, N. Y.

CORKANSTELE

What It Is

A semi-fabricated system of steel framed, insulated, building construction employing pure corkboard; in which the steel frame and insulation itself form the structure: To which are applied the interior and exterior finish, finish floors and ceilings, decorations, and mechanical equipment—all within the complete option of the architect.

Scope of Design

Corkanstele construction is equally suited to all types of architecture: Colonial, English, Modernistic, etc. The architect is free to design as suits his subject, the only limit being our standard three-foot module for the length and width of the building.

For What Classes of Structures

Residences—\$2,500 to \$50,000 and upward. Heating economy (experience) ranges from 40% to 60%.

Churches and Parish Houses—Intermittent use structures are quickly heated. Air conditioning is operated at minimum cost.

Community Buildings and Gymnasiums—A particularly economical construction for any large open interior structure.

Movie Houses and Theatres—Sound control, air conditioning, and decoration are effectively inbuilt without added expense.

Country Clubs and Amusement Places—Rapid inexpensive erection. Low upkeep.

Pent Houses, an Extra Story or Fire Resistant Walls—Where masonry construction is too heavy.

Commercial and Industrial Structures—Corkanstele Building Construction was developed originally for industrial buildings, particularly for refrigerated houses such as ice, fruit and meat storage: Buildings in which strength, permanency and insulation pre-eminently are dominant factors. In Corkanstele refrigerated buildings the actual walls and roofs constitute the insulation itself required to maintain temperatures inside as low as 0° F. or lower. None but the best type of workmanship and material can permanently maintain extreme temperature differences such as these.

Technical Description

Roof—Any pitch or flat roof; steel rafters, pure cork insulation continuous with wall insulation. Additional nailing surface for tile or slate.

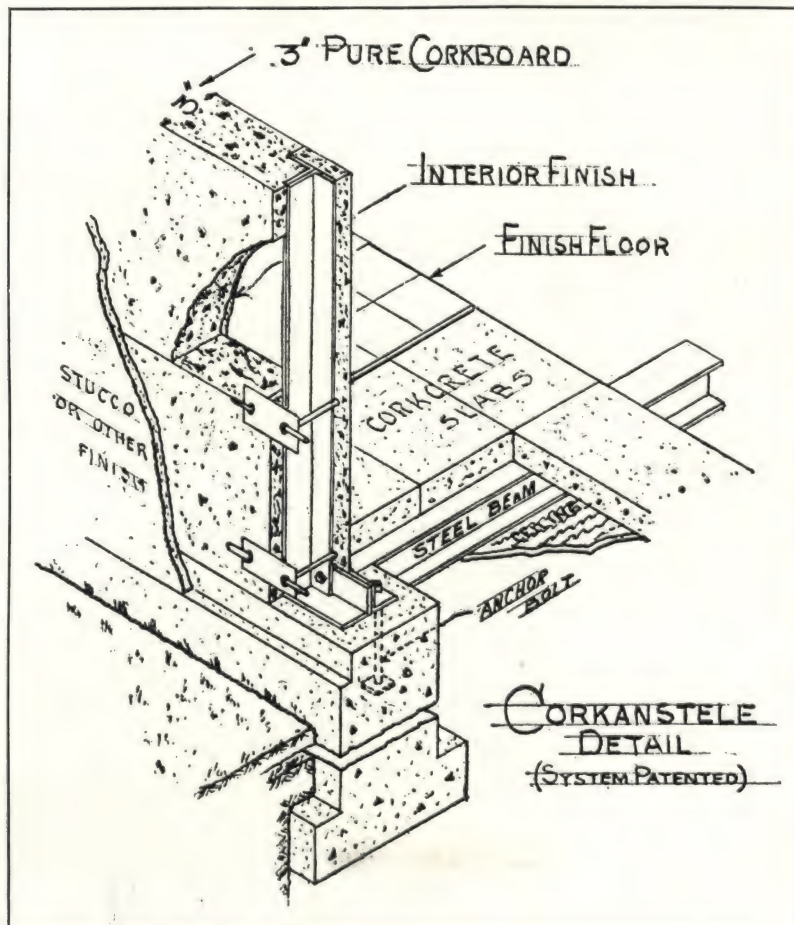
Cornice—Provision for any detail.

Walls—Steel framed, shrink and lightning proof, dense fire-resistant corkboard filler 3 in. thick, in continuous integral insulation.

Insulation—3 in. pure dense corkboard, continuous over entire exterior structural area of house.

The Corkanstele Structure

The steel carries the loads; the pure cork insulation, 3 in. thick, is continuous; it is not penetrated by metal, and constitutes the structure itself (patented)



Isometric Showing the Corkanstele Basic Principle

Note the full draftproof surface-to-surface contacts of the corkboard, machined on all four edges; the self-leveling shrink and settlement-proof foundation sill, and the easy application of the work of other trades

Floors—Steel beams, precast Corkcrete slabs ready for finish floor and flat ceiling by others.

Windows and Doors—Provision in steel frame for securing bucks, frames, and trim by others.

Exterior Finish—Stucco, siding, shingles, brick, or stone (by others) equally optional.

Interior Finish—Plaster or plastic paint (by others) direct; or furred out for large pipes and ducts. Provision for securing trim.

Floors on Fill—Of Insulating Corkcrete.

Partitions—Sound-proof, of Corkcrete blocks, or Corkboard.

Foundations—By others with anchor bolts for the Corkanstele steel framing sill.

Appearance—Of finished structure; normal within and without. Architectural style and decoration is not limited by the Corkanstele construction.

Theory—Experiment: Long Past—Corkanstele is the "house broke" version of a commercial type of insulative building construction in use some twenty years in industrial fields, particularly cold storage; where precision of temperature control depends on proven service—not laboratory ratings.

Cost—Does not exceed 10% more than standard wood frame construction insulated, for small buildings. For large structures and residences with brick or masonry walls Corkanstele usually effects a saving in cost.

General Notes

Where Corkanstele Construction Can Be Had—Single houses or small developments may be built anywhere within reach of our branches or licensees. Larger developments—anywhere. Corkanstele is erected as a sub-contract under the general contract, which otherwise remains unchanged.

Rapid Erection—Eight to fourteen working days for medium size residences; from the prepared foundation walls, to completed structural enclosure.

Other Trades Not Inconvenienced—Corkanstele construction has been developed specifically to avoid collateral costs.

Connective Details—Either customary, simple or obvious. Working details of standard Corkanstele, dimensions and connective details available for drafting room use.

Insulation Is Positive—The insulation is the structure itself. It is not dependent on supervision, workman performance, or accessibility for its efficiency. If it's built, it's insulated.

Heating—Air Conditioning—Wall and roof exposure may be figured at .08 without further allowances. Corkanstele puts air conditioning on the same positive basis of performance and maximum economy in residential work as is basically necessary in industrial refrigeration.

Gas Heating—With no consequential heat loss other than glass area and air changes, residential heating by gas is practicable.

Fire—Corkboard when plastered or stuccoed (as employed in Corkanstele) is positively fire retardant. (Underwriters Laboratories Test, Retardant No. 559, July 10, 1912.)

Vermin — Termites — Neither like it. Corkanstele easily is made completely Vermin Proof.

Specifications

Short Form—Exterior supporting walls and roof, the structural floors and partitions, but not the exterior or interior finish thereof, shall be of Corkanstele construction, to be furnished and erected by CORKANSTELE COMPANY, 270 Madison Avenue, New York City, to whom bidding contractors are referred for details and information as to structural items so furnished.

Further Information

The Corkanstele complete structural system (patented) is erected solely by Corkanstele or its authorized builders under Corkanstele Main Office Engineer supervision.



Corkanstele Residence Partially Completed
JULIUS GREGORY, Architect



Parish House and Gymnasium at Port Washington, N. Y.
185,000 cu. ft. Heats with 22 tons of coal



Neighborhood Theatre at Middleburg, Va.
Corkanstele acts also as acoustical corrective



The "Tornado House"

Took the Florida wind of August 7-8, 1928, without damage

CARNEGIE-ILLINOIS STEEL CORPORATION

GENERAL OFFICES

Carnegie Building, PITTSBURGH, PA.

For List of District Offices and General Products see our page on Steel Bearing Piles

United States Steel Corporation Subsidiary

Carnegie Light-Weight Sections

Engineers and designers have welcomed the addition of Carnegie Light-Weight Sections to the well known wide-flange CB Series. These light beams, stanchions and joists have the same efficient distribution of metal as the CB Sections, providing the greatest possible strength per pound of metal. They are found particularly useful in the construction of floor, roof or wall systems of apartments, schools, churches, stores, hospitals, etc., where live loads are relatively light.

Advantages

Safety and stability during and after construction because of CB wide flange design. Extreme rigidity, eliminating unsightly plaster cracks and unpleasant vibration. Low dead weight of construction with resultant economies in the entire structure.

Uses

For better grade, light-occupancy, long span structures, such as fully fireproofed schools, apartments and mercantile buildings, Carnegie Light Weight Beams are used in the same manner as standard-weight structural shapes to transmit floor or roof loads of a panel into main supporting beams or girders. In this class of construction the beams are used at relatively wide spacing and are fully encased. The weight of steel is reduced to a minimum. The sections are of sufficient stability so that no special bridging or bracing of the top flanges is required.

For light-weight, non-combustible, fire-resistant framing or for wall bearing construction, such as two or three-story apartments, large residences, and light mercantile buildings, Carnegie Light-Weight Joists are recommended. In this class of construction the joists are not encased, but support a fireproof



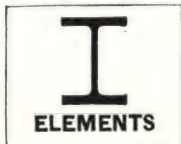
Carnegie Light-Weight Sections in Hillside Housing Corporation Development, Bronx, N. Y.

floor slab, the sides and bottoms being protected by metal lath and several coats of plaster. The joists are spaced closely on maximum permissible spans for their depth. This close spacing of floor joists permits an appreciable reduction in the weight and thickness of floor slabs, yet without an excessive use of steel.

General

For complete information, handbooks or engineering co-operation on the light-weight sections described here or Carnegie standard or CB wide flange sections, consult the home office or any of the District Offices of the Company.

ELEMENTS OF SECTIONS



Section Index and Nominal Size	Depth of Section In.	Weight per Foot Lbs.	Area of Section In. ²	Flange		Web Thickness In.	Axis 1-1			Axis 2-2		
				Width In.	Thick-ness In.		I	S	r	I	S	r
							In. ⁴	In. ³	In.	In. ⁴	In. ³	In.
LIGHT BEAMS												
*CB 81	8.19	21	6.18	5.272	4.03	.252	73.8	18.0	3.45	9.13	3.5	1.22
8 x 5¼	8.09	19	5.59	5.264	.353	.244	64.7	16.0	3.40	7.87	3.0	1.19
	8.00	17	5.00	5.250	.308	.230	56.4	14.1	3.36	6.72	2.6	1.16
CBL 12	12.31	22	6.47	4.030	.424	.260	155.7	25.3	4.91	4.55	2.26	0.84
12 x 4	12.16	19	5.62	4.010	.349	.240	130.1	21.4	4.81	3.67	1.83	0.81
	12.00	16½	4.86	4.000	.269	.230	105.3	17.5	4.65	2.79	1.39	0.76
CBL 10	10.25	19	5.61	4.020	.394	.250	96.2	18.8	4.14	4.19	2.08	0.86
10 x 4	10.12	17	4.98	4.010	.329	.240	81.8	16.2	4.05	3.45	1.72	0.83
	10.00	15	4.40	4.000	.269	.230	68.8	13.8	3.95	2.79	1.39	0.80
CBL 8	8.12	15	4.43	4.015	.314	.245	48.0	11.8	3.29	3.30	1.65	0.86
8 x 4	8.00	13	3.83	4.000	.254	.230	39.5	9.88	3.21	2.62	1.31	0.83
CBL 6	6.25	16	4.72	4.030	.404	.260	31.7	10.1	2.59	4.32	2.14	0.96
6 x 4	6.00	12	3.53	4.000	.279	.230	21.7	7.24	2.48	2.89	1.44	0.90
STANCHIONS												
CBS 6	6.09	18	5.28	6.025	.314	.265	35.5	11.7	2.59	11.0	3.64	1.44
6 x 6	6.00	15½	4.59	6.000	.269	.240	30.1	10.0	2.56	9.19	3.06	1.42
JOISTS												
CBJ 12	11.91	14	4.14	3.970	.224	.200	88.2	14.8	4.61	2.25	1.13	0.74
12 x 4												
CBJ 10												
10 x 4	9.87	11½	3.39	3.950	.204	.180	51.9	10.5	3.92	2.01	1.02	0.77
CBJ 8												
8 x 4												
CBJ 6	7.90	10	2.95	3.940	.204	.170	30.8	7.79	3.23	1.99	1.01	0.82
6 x 4												
6 x 4	5.83	8½	2.50	3.940	.194	.170	14.8	5.07	2.43	1.89	0.96	0.87

FERROCON CORPORATION

Queen Street and Mermaid Lane
Chestnut Hill Station
PHILADELPHIA, PA.

General

FERROCON is a patented, interlocking steel unit building system, consisting of wall, floor, partition and roof units, together with their component associated connecting parts. FERROCON permits the use of flat or pitched roof construction. This system offers the architect and builder wide flexibility of design and exterior finish whether of stone, brick, stucco, clapboard, etc. Any desired conventional interior finish can be employed.

Description

FERROCON units consist of two composite key-ways constructed of heavy gauge, cold-rolled steel, protected against corrosion, and spaced by an approved heavy gauge expanded and ribbed metal lath. A three-inch filling of waterproofed mineral wool or other fireproof insulation is interposed between the metal lath sides of the unit.

These insulated rigid steel units are furnished in varying widths and lengths to meet any architectural design. Erection of these units is simple as they are butted together along their vertical edges, and the composite vertical key-ways aligned and keyed together with a bi-tubular heavy gauge steel key, which remains in permanent engagement with the abutted key-ways of the units. Each pair of key-ways, when in locking engagement with the bi-tubular keys, form a composite stud member having exceptional strength, far in excess of any known building code requirement (supported by report of Pittsburgh Testing Laboratories).

A plurality of these composite steel units or stud members forms the steel structure of the building, and as the lath and insulation are already incorporated in the pre-fabricated unit, it is necessary only to apply the desired plastic coatings or finish to complete the structure.

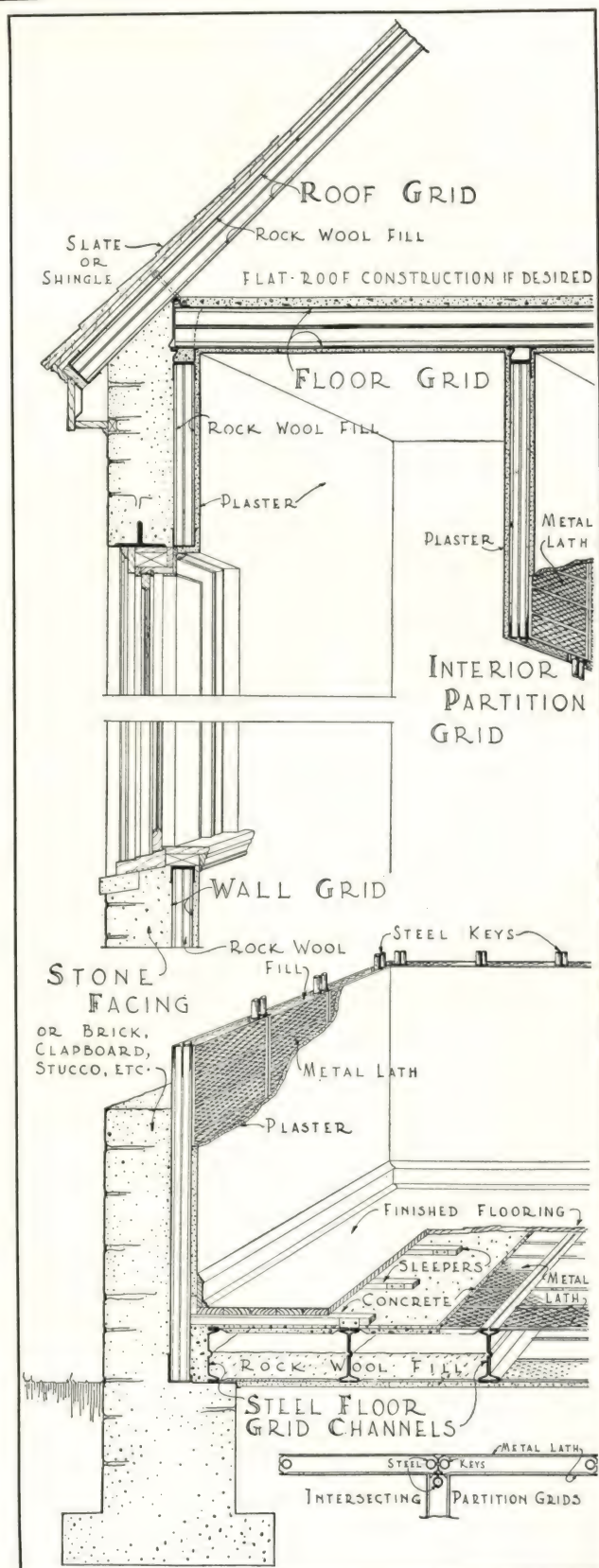
The FERROCON system has a distinct advantage in that it lends itself readily to the installation of all electrical conductors, service piping and heating or air-conditioning ducts. The complete FERROCON system is thoroughly protected by a wide range of issued patents.

Special Features

FERROCON is highly fire-resistant, vermin and termite proof, substantially soundproof, and is also a lightning arrester.

Complete assembly of all integral parts under the FERROCON system results in extremely rigid and substantial construction.

In addition to providing these valuable features, the total cost of a house constructed of FERROCON will approximate the cost of a comparable structure of wood frame.



MEMORANDA



J & L

JUNIOR BEAM FLOORS

FOR
RESIDENCES
SCHOOLS
AND
OTHER LIGHT
OCCUPANCY
BUILDINGS

JONES & LAUGHLIN STEEL CORPORATION
AMERICAN IRON AND STEEL WORKS
PITTSBURGH.

J & L JUNIOR BEAMS FOR GENERAL CONSTRUCTION

THE J & L JUNIOR BEAM is the lightest rolled structural steel I-beam now available and was designed to provide the building industry with sections which would make possible new economies in practically all types of construction. That this object has been accomplished has been proved in hundreds of buildings ranging from small residences to large schools, stores, apartments, hospitals and many other light occupancy structures.

The Junior Beam is made of structural grade steel rolled from the billet to the full I-section in a continuous mill with but slight change in temperature from the reheating furnace to the cooling bed.

The function of the Junior Beam used as a floor beam or roof purlin is to carry the live and dead loads and transfer them to the heavier main carrying members of the frame work or to the supporting walls.

The data on the following pages are divided into two sections for convenience of use and because certain requirements govern the design and use of Junior Beams in general construction which do not apply when they are used in residences. The first section contains engineering design data and tables which the architect, engineer and contractor will use for buildings other than residences. Loads, spacings, end connections and floor and ceiling construction data affect the design in such buildings. The second section relates primarily to the layout and construction of floors for residences for which the design is less complicated and the plan usually involves fewer details and more simple construction.

Advantages of J & L Junior Beam Floors

The J & L Junior Beam Floor offers the architect and contractor many advantages. Some of these are suggested below and others will occur to the reader as he studies the data in this catalog.

Unusual economies due to the light weight of the floors and the consequent saving in main frame and foundations.

No shoring is necessary to place the concrete slabs. This reduces costs and permits workmen to install partitions, plumbing, and to do steam fitting, etc., without waiting for removal of the shoring.

Walls can be erected as soon as the steel is placed.

Junior Beams are carried in stock and are available without delay.

Jones and Laughlin Service

Jones & Laughlin District Sales Offices are situated in all important centers. J & L engineers familiar with J & L Junior Beams and their uses are available in these offices for advice and assistance.

When you desire to have detailed information in connection with the design of J & L Junior Beams, please ask the nearest office for Bulletin which contains all such data.

The JONES & LAUGHLIN STEEL CORPORATION offers, also, the aid of skilled field engineers to service any particular building operation in which Junior Beams are used.

JONES & LAUGHLIN STEEL CORPORATION

American Iron and Steel Works

PITTSBURGH, PENNSYLVANIA

For List of Sales Offices, Warehouses and Fabricating Plants—See Back Cover

ENGINEERING DATA ON J & L JUNIOR BEAMS FOR GENERAL CONSTRUCTION

Junior Beams are homogeneous steel I-sections in their original symmetrical form as rolled and, as such, can be used in structural design up to their full value by employing standard engineering formulae and without empirical assumptions.

Official Classification of Junior Beams

Junior Beams are extensively used throughout the United States and Canada in floor systems, the carrying capacity being based on the same fiber stress as that of standard weight structural steel sections.

J & L Junior Beams are rated as structural steel by the American Institute of Steel Construction and their properties and dimensions are included in the handbook of information published by the Institute.

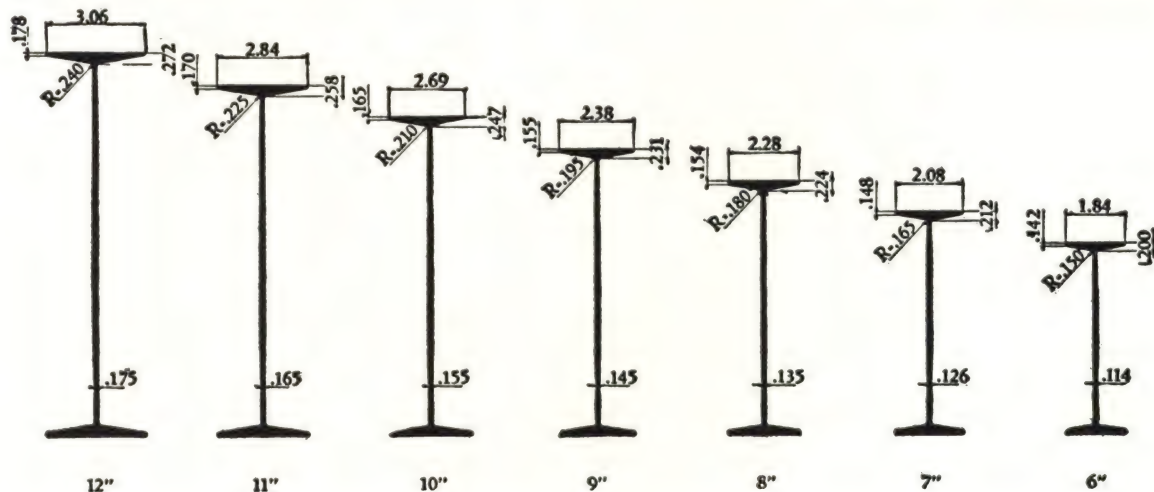
Uses for Junior Beams and General Construction

The principal use of Junior Beams is as secondary members in floor and roof construction of buildings. They are also being used

in increasing quantities as purlins, rafters and girts for mill and hangar buildings, ceiling supports over auditoriums, protection sheds and scaffolding, monorails, supports for conveying and mechanical equipment, and all classes of structural work where, due to their light weight, they are the most economical sections to be used.

The adaptability of Junior Beams to floor construction provide many economies due to light weight of floor and ease of erection. A floor containing the least amount of steel, concrete and labor can be designed by judicious combination of companion materials. It is advantageous to utilize in good designs, the actual strength of properly proportioned thin concrete slabs by spacing Junior Beams to their capacity and also where practicable, designing the Junior Beams as continuous spans. The floor will be light, rigid, and have a minimum amount of deflection. It will be quickly erected, firesafe and soundproof. Precast gypsum slabs and other lightweight materials are also employed in obtaining similar economies.

Sizes, Weights and Properties of J & L Junior Beams



Depth, in.	Weight, lbs. per ft.	Flange width, in.	Web thickness, in.	Area, sq. in.	Radius of gyration		Moment of inertia		Section modulus	
					Hor. axis	Vert. axis	Hor. axis	Vert. axis	Hor. axis	Vert. axis
12	11.8	3.06	.175	3.45	4.573	0.532	72.21	0.978	12.01	0.638
11	10.3	2.84	.165	3.01	4.200	.498	53.08	.746	9.63	.525
10	9.0	2.69	.155	2.64	3.847	.480	39.01	.608	7.78	.452
9	7.5	2.38	.145	2.20	3.450	.423	26.20	.394	5.81	.332
8	6.5	2.28	.135	1.92	3.116	.423	18.67	.343	4.65	.301
7	5.5	2.08	.126	1.61	2.744	.393	12.13	.248	3.45	.239
6	4.4	1.84	.114	1.30	2.372	.357	7.30	1.65	2.42	.179

TABLE OF SPACINGS

TOTAL SAFE LOADS FOR J & L JUNIOR BEAMS

FIBER STRESS—18,000 POUNDS PER SQUARE INCH

Span of Beam	Depth of Beam	Total Safe Uniform Load on Beam Pounds	TOTAL LOAD PER SQUARE FOOT and SPACING OF JUNIOR BEAMS IN INCHES															
			50 Lb.	60 Lb.	70 Lb.	80 Lb.	85 Lb.	90 Lb.	95 Lb.	100 Lb.	105 Lb.	110 Lb.	115 Lb.	120 Lb.	130 Lb.	140 Lb.	150 Lb.	160 Lb.
26'-0"	12"	5542	51	42½	36½	32	30	28½	27	25½	24½	23	22	21	19½	18	17	16
25'-0"	12"	5764	55	46	39½	34½	32½	30½	29	27½	26½	25	24	23	21	19½	18½	17
24'-0"	12"	6004	60	50	43	37½	35½	33½	31½	30	28½	27	26	25	23	21½	20	18½
	11"	4815	48	40	34	30	28	26½	25	24	23	22	21	20	18½	17	16	15
23'-0"	12"	6265	65	54½	46½	41	38½	36½	34	32½	31	29½	28½	27	25	23	21½	20½
	11"	5024	52	43½	37½	32½	31	29	27½	26	25	23½	22½	21½	20	18½	17½	16
22'-0"	12"	6549	71	59½	51	44½	42	39½	37½	35½	34	32½	31	29½	27½	25½	23½	22½
	11"	5253	57	47½	41	36	33½	31½	30	28½	27	26	25	24	22	20½	19	18
	10"	4244	46	38½	33	29	27	25½	24½	23	22	21	20	19	18	16½	15½	14½
21'-0"	12"	6861	78½	65½	56	49	46	43½	41½	39	37½	35½	34	32½	30	28½	26	24½
	11"	5503	63	52½	45	39½	37	35	33	31½	30	28½	27	26	24	22½	21	19½
	10"	4446	51	42½	36½	32	30	28	26½	25½	24	23	22	21	19½	18	17	16
20'-0"	12"	7204	86½	72	61½	54	51	48	45½	43	41½	39	37½	36	33	31	29	27
	11"	5778	69½	57½	49½	43	41	38½	36½	34½	33	31½	30	29	26½	25	23	21½
	10"	4668	56	46½	40	35	33	31	29½	28	26½	25½	24	23	21½	20	18½	17
	9"	3486	42	35	30	26	24½	23	22	21	20	19	18	17½	16	15	14	13
19'-0"	12"	7584	96	80	68½	60	56½	53½	50½	48	45½	43½	41½	40	37	34½	32	30
	11"	6082	77	64	55	48	45	42½	40½	38½	36½	35	33½	32	29½	27½	25½	24
	10"	4914	62	51½	44½	38½	36	34½	32½	31	29½	28	27	26	24	22	20½	19½
	9"	3670	46½	38½	33	29	27	25½	24½	23	22	21	20	19½	18	16½	15½	14½
18'-0"	12"	8005	107	89	76	67	63	59½	56½	53½	51	48½	46½	44½	41	38	35½	33½
	11"	6420	85½	71½	61	53½	50½	47½	45	43	41½	39	37	35½	33	30½	28½	26½
	10"	5187	69	57½	49½	43	40½	38½	36½	34½	33	31½	30	29	26½	25	23	21½
	9"	3874	51½	42	37	31½	29½	28	26½	25	24	23	22	21½	19½	18	17	16
	8"	3101	41½	34½	30	26	24½	23	22	21	20½	19½	18½	17	16	14½	13	12
17'-0"	12"	8476	120	100	85½	75	70½	66½	63	60	57	54½	52	50	46	42½	40	37½
	11"	6797	96	80	68½	60	56½	53½	50½	48	45½	43½	41½	40	37	34½	32	30
	10"	5492	77½	64½	55½	48½	45½	43	41	39	37	35	33½	32	30	27½	26	24
	9"	4102	58	48	41½	36	34	32	30½	29	27½	26½	25	24	22	20½	19½	18
	8"	3283	46½	38½	33	29	27	25½	24½	23	22	21	20	19½	18	16½	15½	14½
16'-0"	11"	7222	108	90	77½	67½	64	60½	57	54	51½	49	47	45	41½	39	36	34
	10"	5836	87½	73	62½	54½	51½	48½	46	44	41½	40	38	36½	33½	31	29	27
	9"	4358	65	54½	46½	40½	38	36	34	32½	31	29½	28	27	25	23	21½	20½
	8"	3489	52½	43½	37	33	29	27½	26	25	24	23	22	21½	20	18½	17	16½
	7"	2589	39	32	27½	24	21	20½	19½	18½	17½	17	16	15	14	13	12	11
15'-0"	11"	7704	123	102½	88	77	72½	68½	65	61½	58½	56	53½	51½	47½	44	41	38½
	10"	6225	100	83	71	62½	58½	55½	52½	50	47½	45	43½	41½	38½	35½	33	31
	9"	4648	74½	62	53	46½	44	41½	39	37	35½	34	32	31	28½	26½	24½	23
	8"	3721	59½	49½	42	37	35	33	31½	30	28½	27	26	25	23	21	19½	18½
	7"	2762	44	37	31½	27½	26	24½	23	22	21	20	19	18½	17	15½	14½	13½
14'-0"	10"	6669	114	95	81½	71½	67	63½	60	57	54½	52	49½	47½	44	41	38	35½
	9"	4981	85½	71	61	53½	50	47½	45	42½	41	39	37	35½	33	30½	28½	26½
	8"	3987	68½	57	49	42½	40	38	36	34	32½	31	29½	28	26	24½	22½	21½
	7"	2959	51	42	36½	32	30	28	26½	25½	24	23	22	21	19½	18	17	16
	6"	2077	35½	29½	25½	22	21	20	18½	18	17	16	15½	14½	13½	12½	11	10
13'-0"	10"	7182	132	110	95	83	78	74	70	66	63½	60	57½	55	51	47½	44	41½
	9"	5364	99	82½	71	62	58½	55	52	49½	47	45	43	41	38	35	33	31
	8"	4294	79½	66	56½	49½	46½	44	41½	39½	38	36	34½	33	30½	28	26½	24½
	7"	3187	59	49	42	37	34½	32½	31	29½	28	26½	25½	24½	22½	21	19½	18½
	6"	2236	41½	34½	29½	25	24	23	21½	20½	19½	18½	18	17	16	14½	13½	13
12'-0"	9"	5811	116	96½	83	72½	68	64½	61½	58	55½	53	50½	48½	44½	41½	38½	36
	8"	4651	93	77½	66½	58	55	51½	49	46½	44½	42	40½	39	36	33	31	29
	7"	3452	69	57½	49	43	40½	38½	36	34½	33	31½	30	28½	26½	24½	23	21½
	6"	2423	48½	40½	34½	30	28½	27	25½	24	23	22	21	20	18½	17	16	15
11'-0"	9"	6339	138	115	99	86½	81½	77	73	69	66	63	60	57½	53	49½	46	43
	8"	5074	111	92	79	69	65½	61½	58½	55½	52½	50	48	46	42½	39½	37	34½
	7"	3766	82	68½	59	51	49	45½	43½	41	39	37	35½	34	31½	29½	27	25½
	6"	2643	57½	48	41	36	34	32	30½	29	27½	26	25	24	22	20½	19	18
10'-0"	8"	5582	134	111	96	84	79	74½	70½	67	64	61	58	56	51½	48	45	42
	7"	4143	99	82½	71	62	58	55	52	49½	47	45	43	41½	38	35½	33	31
	6"	2907	69½	58	50	43½	41	39	36½	35	33	31½	30	29	27	25	23	21½
9'-0"	7"	4603	123	102	87½	76½	72	68	64½	61½	58½	56	53	51	47	44	41	38
	6"	3230	86	71½	61½	53½	50½	48	45	43	41	39	37½	36	33	31	29	27
8'-0"	7"	5178	155½	129½	111	97	92	86½	82	77½	74½	70½	67	64½	59½	55½	51½	48½
	6"	3634	109	91	78	68	64	60½	57½	54½	52	49½	47½	45½	42	39	36	34

* In designing Junior Beam Floors, bear in mind that the use of the deepest Junior beam at the widest spacing will provide a floor having the least amount of steel per square foot.

END CONNECTIONS FOR J & L JUNIOR BEAMS

The illustrations below show the method of framing Junior Beams to a steel frame with clip angles, and details of the standard Junior Beam end connection.

Clip Angle End

Figs. 1 and 2 show how Junior Beams are framed to the main carrying members by use of one clip angle at each end of the Junior Beam. The Junior Beams and carrying beams are merely punched before shipment. The clip angles may be shipped loose, or bolted to either the Junior Beams or to the primary members, as desired.

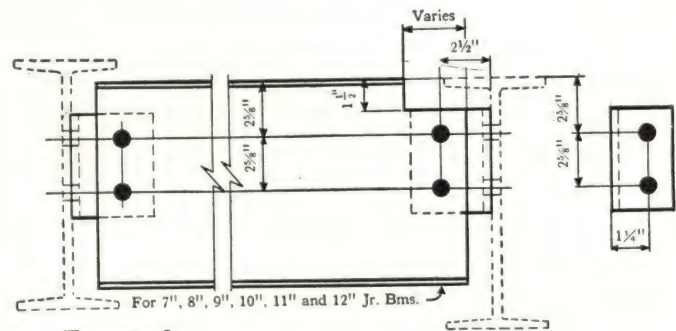


FIGURE 1

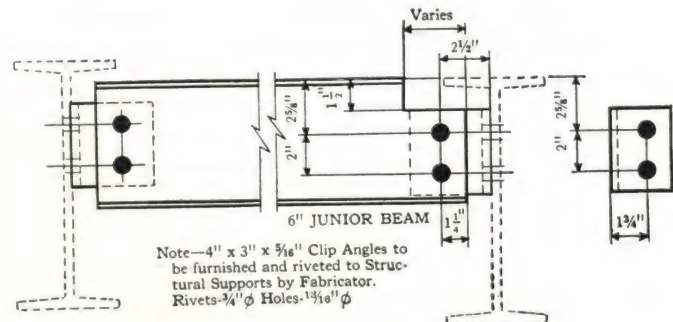


FIGURE 2

Figs. 3, 4 and 5 show details of the J & L standard Junior Beam end. The end is composed of two angles riveted back to back on the Junior Beam. In all three of these sketches, the top of the Junior Beams are $2\frac{1}{2}$ " above the supporting structural members.

Fig. 3 shows the standard end for 6", 7" and 8" Junior Beams.

Fig. 4 shows the standard end for 9" and 10" Junior Beams.

Fig. 5 shows the standard end for 11" and 12" Junior Beams.

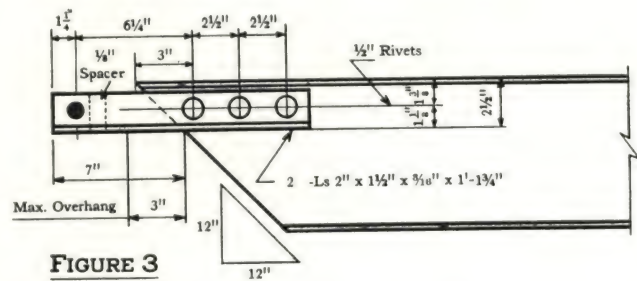


FIGURE 3

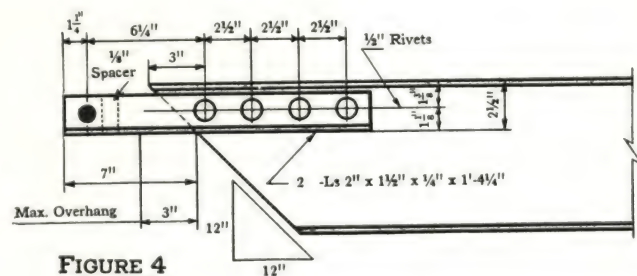


FIGURE 4

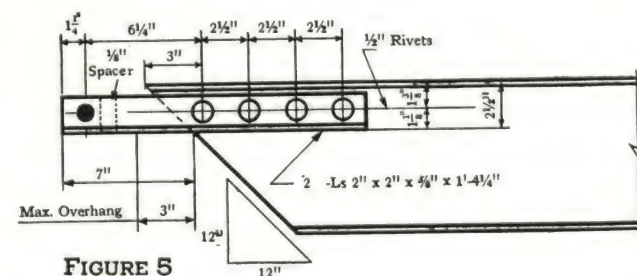
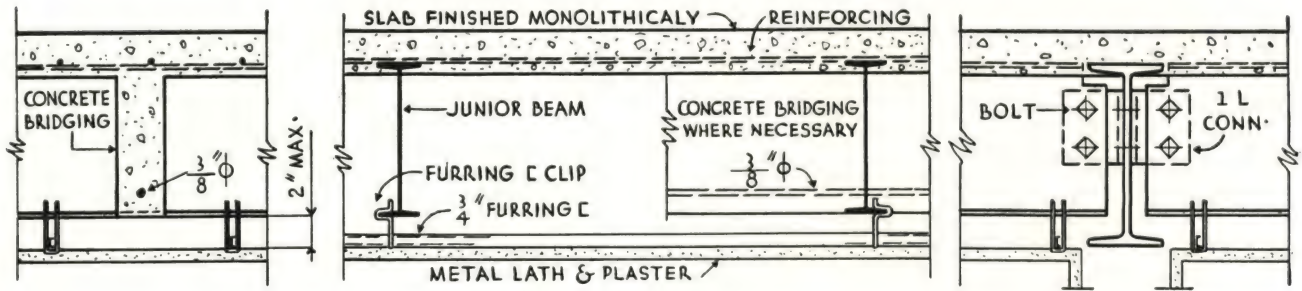


FIGURE 5

J & L JUNIOR BEAMS FLOORS IN GENERAL CONSTRUCTION

Monolithically-Finished Concrete Floor

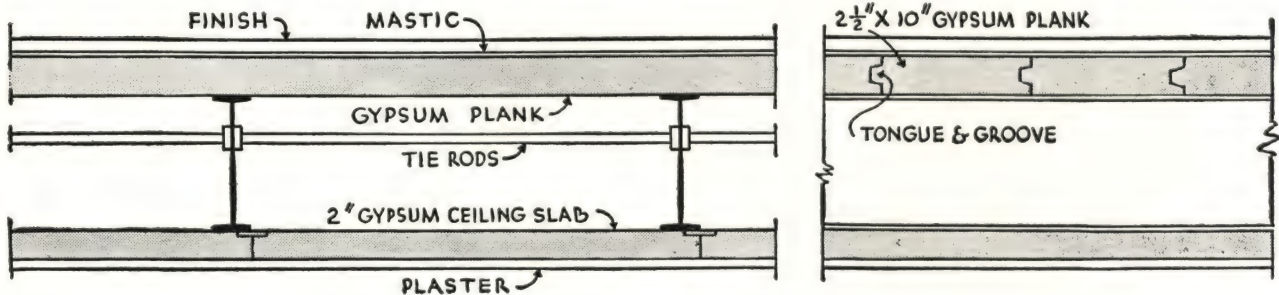


Where possible the Junior Beams are made continuous over three supports or more.

By encasing the top flanges, the floor is made rigid and does not require bridging in light occupancy buildings. Where concentrated loads must be transferred over two or more beams, it is done by the use of concrete bridging poured monolithically with

the slab. The slab is poured on a simple form, of either wood or metal. If wood is used, the beams can be spaced so that ripping of form boards is avoided. Clips are furnished for fastening the ceiling furring channels to the bottom flanges, allowing 2 inches of space to the bottom of the channels in which to run electrical conduits. This is the most economical quality floor that can be built.

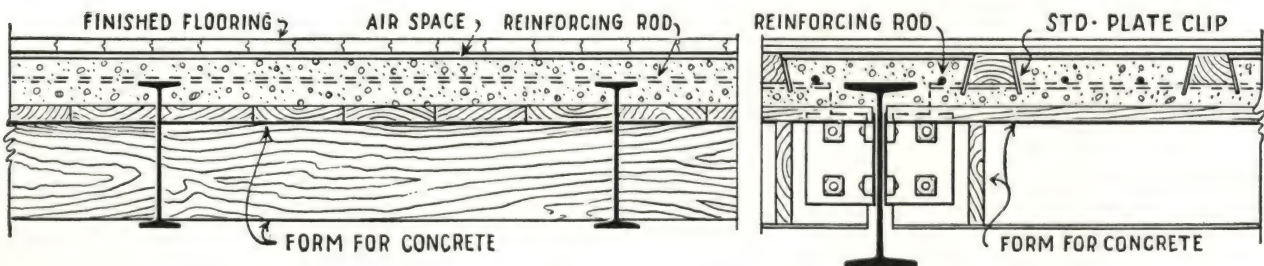
Gypsum Slabs



The lightest type of floor providing four-hour fire protection is obtained by the use of precast gypsum floor planks and ceiling slabs, securely fastened to the Junior Beams by means of clips and hangers.

The floor planks are furnished in lengths 6 ft. 0 in. to 10 ft. 0 in. and the Junior Beams spaced to accommodate the required loading. This floor is quickly erected and due to the light weight, effects considerable economy in the main steel frame and foundations.

Wood Form — Concrete Slab — Wood Floor



This type of Junior Beam floor is easy to install and is especially satisfactory. When 8 in. Junior Beams are used, the spreaders (vertical boards supporting form) will be 1 in. by 6 in. The form is constructed of ordinary sheathing. The reinforcing is 1/4 in. rods, 6 in. to 8 in. o. c., and the wooden sleepers, fastened to the

top flanges of the Junior Beams with standard plate clips, are spaced 12 in. to 16 in. o. c. No bridging is necessary as the concrete slab engages and holds rigidly the top flanges of the steel. Plaster ceiling is applied in the same manner shown at top of page in details of monolithically-finished concrete floor.

SPECIFICATIONS FOR J & L JUNIOR BEAMS IN GENERAL CONSTRUCTION

Architects and engineers should include Junior Beams in the structural steel section of specifications, as they are an integral part of the structural framework of the building, to be supplied by the structural steel contractor. This procedure insures proper co-ordination of design and detail under one engineering control and also proper timing of arrival of all structural material to the site and erection by the same erector.

The following specifications have been developed with the idea that they will aid designers in properly specifying J & L Junior Beams. Specifications may be used either in whole or in part with absolute confidence; they represent the best thought and standard practice at the present time.

Description—The structural part of the floor system shall consist of the slab supported on Jones & Laughlin Junior Beams, acting as secondary members of dimensions as shown on drawings. Before shipment, all J & L Junior Beams shall be given a coat of paint.

Partitions—Proper provision shall be made in the loading for the weight of partitions.

Bridging—The J & L Junior Beam shall be bridged as shown on the drawings with (tension compression) (tie rod) (solid concrete crossbeam) ($12\frac{1}{2}$ gauge wire). Where wire or tie rod bridging is used, the end Junior Beam in each panel shall be fastened to bridging anchors set in outside wall or to parallel structural steel.

Wall Plates—Standard Junior Beam wall plates shall be used under the ends of Junior Beams resting on bearing walls.

Anchors—Where Junior Beams rest on masonry walls, a $\frac{1}{2}$ in. by 8 in. round anchor shall be used (in such Junior Beams as the local building code requires).

Sleepers—Where wood floors on top of concrete slabs attached to sleepers are specified, the sleepers shall be preferably of hardwood, embedded in the slab. Sleepers shall be attached to the tops of Junior Beams by means of proper clips. Sleepers shall be run (at right angles to the Junior Beams and be spaced . . . in. apart) (diagonally to the Junior Beams). Substitution may be made for the above, dependent upon the type of floor system under consideration.

Floor Slabs—Concrete floor slabs shall be designed to suit the loading and spacing of Junior Beams. The slabs shall be poured on (self-centering lath) (paper-backed fabric) (removable forms). The concrete shall be composed of one part cement and a graded mixture consisting of not more than seven parts of fine and coarse aggregate. Where the slab is poured on lath, it

shall be mixed sufficiently dry to prevent dripping. Where the slab is poured on removable forms, the maximum size of the aggregate shall be $\frac{1}{2}$ in. and the concrete shall be of a consistency which will allow it to encase the beam flanges and flow under the wood sleepers. Where floor slabs of other material than concrete are used, they shall be designed to carry the specified loading in accordance with manufacturer's specifications.

Permanent Centering—Lath shall be applied with sheets running at right angles to the Junior Beams. Metal lath shall be securely fastened to the tops of the Junior Beams with lath clips on 12 in. centers, except at ends of sheets where lath clips shall be at 6 in. centers, and applied with a special tool furnished by the manufacturers of the J & L Junior Beams. Lath sheets shall be securely wired together along the side laps midway between Junior Beams. Any approved form of metal lath or backed floor fabric may be used. Any and all clips, ties, or other accessories necessary for the proper application of each particular type of centering shall be used in accordance with these specifications or the specifications of the manufacturer of the respective centering materials. The writer of the specifications shall define the type and quality of the centering to meet the particular requirements.

Removable Forms—Either wood or steel forms may be employed, placed so that the compression flange of the Junior Beams will be embedded. Where a plaster ceiling is not used and appearance is a factor, there should be a minimum of $\frac{3}{4}$ in. embedment of top flange. Standard practice regarding the use of shoreless forms will obtain.

Temperature and Shrinkage Reinforcing—When finished floors are made of composition, terrazzo or materials other than wood, provisions shall be made for proper size of steel reinforcing.

Ceiling Lath—Ceiling lath, covered elsewhere under plastering specifications shall be firmly wired to (pencil rods) (furring channels) which in turn shall be securely fastened to the bottom flanges of the Junior Beams by means of approved clips. Use of J & L furring clip to obtain proper space for conduits is recommended.

Where the spacings of the Junior Beams are narrow, flat or ribbed lath may be fastened directly, by means of an approved clip, to the lower flanges of the Junior Beams. Ribbed lath shall be applied so that the ribs are at right angles to the direction of the pencil rods, or, when pencil rods are omitted, to Junior Beams.

HANGERS AND ACCESSORIES FOR J & L JUNIOR BEAMS

BEAM ANCHOR

For use in anchoring Junior Beams in masonry wall. This anchor is supplied in one size only, as shown. Requires a 13/16 in. hole punched in center of web of Junior Beam, 2 in. from end.



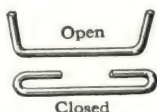
WALLBEARING PLATE

Holds Junior Beam steadily in vertical position during erection. Made in seven sizes, one for each Junior Beam. When ordering, specify depth of Junior Beams.

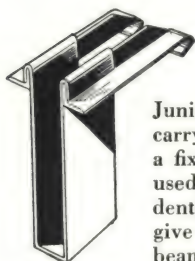


LATH CLIP

For attaching metal lath to either top or bottom flanges of Junior Beams. Made in seven sizes, one for each Junior Beam. When ordering, specify depth of Junior Beams.

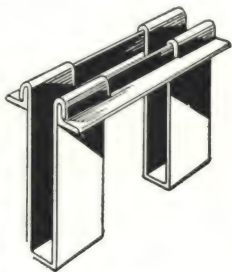


STANDARD STIRRUP HANGERS



Single

Single: For supporting one Junior Beam at right angles to another Junior Beam or structural carrying beam. This is not a fixed connection and is used principally in residential floors. In ordering, give size of both carrying beam and Junior Beam to be supported. For use where top flanges of beams are to be flush.

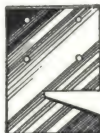


Double

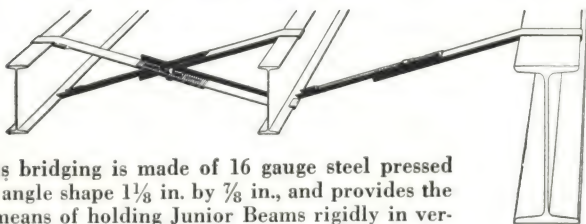
Double: For use as above where Junior Beams are opposite each other and supported by one primary member.

STANDARD PLATE CLIP FOR SLEEPERS

This plate clip is used for fastening sleepers to top flanges of Junior Beams. It is also used for fastening ceiling screeds to bottom flanges of Junior Beams.



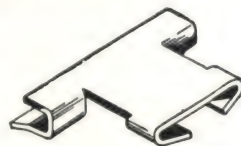
RIGID BRIDGING



This bridging is made of 16 gauge steel pressed to an angle shape 1 1/8 in. by 7/8 in., and provides the best means of holding Junior Beams rigidly in vertical position when floor is placed on top of Junior Beams. Made in three lengths, for 12 in. to 20 in. spacing, for 20 in. to 30 in. spacing and for 30 in. to 36 in. spacing. In ordering, give number of pairs required and spacing of Junior Beams. Wire Bridging can be used as an alternate in certain localities.

TOP FLANGE CLAMP

To be attached to top flanges of Junior Beams when Junior Beams rest on shelf angles. A similar clamp is furnished for attachment to the bottom flange of Junior Beams when Junior Beams rest on top of structural members. The latter clamp has an offset equal to the thickness of the flange of the structural member. These clamps hold Junior Beam steadily in vertical position during erection.



SCREED CHAIRS

To be used in association with metal lath and concrete construction.



Type R

Type R—To be used when the sleeper is placed at right angles to the Junior Beams.



Type P

Sleepers are held securely by nails through loops in sides of chair. Type P—For use as above when sleepers run parallel with Junior Beams.

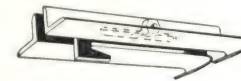
STANDARD ADJUSTABLE ANGLE HANGERS

Double: This connection used principally in residential floors, may be used to support Junior Beams at right angles to and on top of main carrying member. Junior Beams project 2 1/2 in. above top flange of main carrying member. Ends of Junior Beams must be cut at an angle of 45 degrees.



Double

Single: To be used under same conditions as double hangers, but to support Junior Beam on only one side of main carrying member.



Single

REINFORCING ROD CLIP

For attaching 1/4 in. reinforcing rods to either top or bottom flanges of Junior Beams.



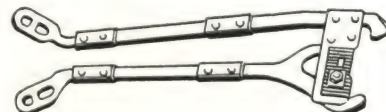
FURRING CHANNEL CLIP

For attaching furring channels to bottom flanges of Junior Beams to provide for plastered ceiling. This clip is supplied in four sizes: 3/4 in., 1 in., 1 1/2 in. and 2 in. In ordering, specify size required.



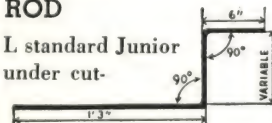
LATH CLIP TOOL

Used for crimping standard lath clips on flanges of Junior Beams.



CEILING EXTENSION ROD

To be used in connection with J & L standard Junior Beam end. This rod carries ceiling under cut-out end of Junior Beam.



BRIDGING ANCHOR

To be used at end of a run of wire bridging. Anchor in wall and attach to both top and bottom flanges of Junior Beam.



J & L JUNIOR BEAM FLOORS FOR RESIDENCES

Study of deterioration in residential construction reveals that, even with the best of foundations, walls and roof, serious and expensive defects develop as soon as shrinkage occurs in the floor joists, as it will when they are of wood. The immediate effect of this shrinkage is a settling of all interior construction depending on the floor joists for support. The results are plaster cracks in walls and ceilings, twisted door frames, uneven floors and gaps between baseboards and flooring.

When the J & L Junior Beam floor for residences is used, the first floor is an integral part of the foundations, providing the same rigid, vibration-free, non-shrinkable support for the interior walls of the house that the foundations provide for the exterior walls. It acts as a complete fire stop between the basement and the remainder of the house, and prevents moisture from rising through partition walls to the floors above. It is vermin-proof and impervious to the attacks of termites.

The J & L Junior Beam floor for residences is universally adaptable. It may be used as the first floor of any house, without imposing any restrictions whatever on either the architect or the builder. The additional advantages of having the same steel and concrete system for the floors above the first are available in any house having solid masonry walls or steel framing. Any type of wearing surface may be applied, hardwood, terrazzo, tile, linoleum, composition block, etc. By following the methods described and illustrated in the following pages, the architect can easily design a Junior Beam floor and any experienced builder can make up his list of materials and install this steel and concrete system as easily as the old-fashioned wooden joist floor. The materials may be obtained through the usual sources of steel supply, or the Jones & Laughlin Steel Corporation will furnish the names of Junior Beam dealers in any given territory.

CONSTRUCTION OF A J & L JUNIOR BEAM FLOOR

The principal materials in the J & L Junior Beam floor for residences are steel and concrete, combined to give maximum structural soundness at lowest cost. No fabrication is required for connecting the steel beams. See Figure 1, in which (1) shows how Junior Beams rest on lower flange of carrying member and (2) how standard stirrup hanger is used to support Junior Beam at right angle to another Junior Beam or standard I-beam.

Fig. 2-a illustrates the installation of the Junior Beam Floor in veneer construction. Outside brick wall, interior wall, concrete firestop and slab and the hardwood wearing surface are cut away to show details of the floor. The Junior Beams are shown resting directly on concrete foundations. The sleepers (2 in. by 3 in. wooden nailing strips) are held securely to the steel by two plate clips at each point where they cross a Junior Beam. Two plain

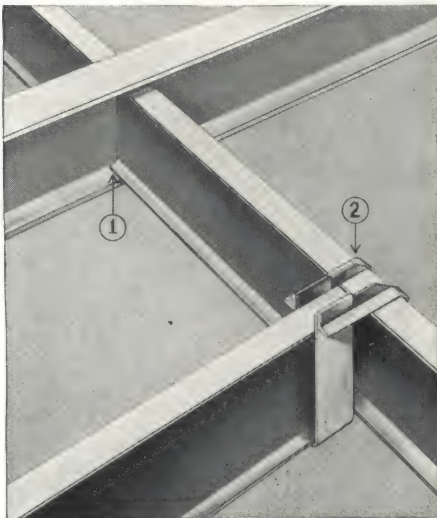


Figure 1

steel reinforcing bars, $\frac{1}{4}$ in. in diameter, are fastened to the Junior Beams between sleepers. The concrete floor slab and the concrete firestop along the foundation wall are then poured in temporary wooden forms, imbedding the top flanges of the Junior Beams, so that the beams, sleepers and reinforcing rods are held rigidly in place. Sleepers are spaced from 12 in. to 16 in. apart and the concrete is leveled

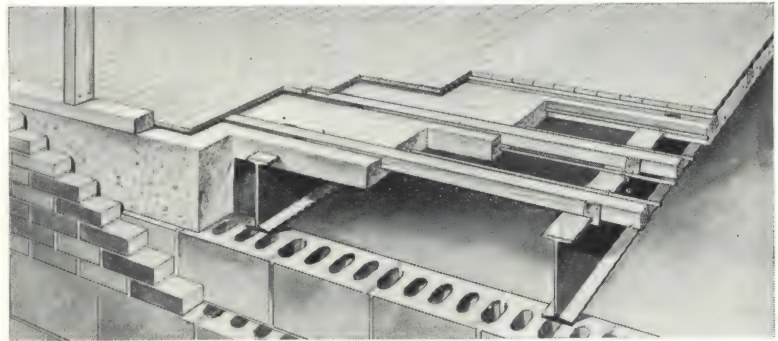


Figure 2-a

eled approximately $\frac{1}{4}$ in. to $\frac{3}{8}$ in. below the tops of them. The hardwood floor is nailed directly to the sleepers. The 2 in. by 4 in. plate for receiving sidewall studs is nailed to wooden blocks imbedded in the concrete firestop along the sidewall shown.

Fig. 2-b shows the J & L Junior Beam floor for residences with linoleum finish. When the finished floor is to be linoleum, tile, terrazzo, wood parquet or any material to be set in mastic, no sleepers are necessary. The concrete slab is floated smooth at the time of pouring, and requires no separate finish to receive the mastic. The finished flooring is then applied according to the manufacturer's specifications. In this floor, $\frac{1}{4}$ in. steel reinforcing bars are placed 18 in. apart at right angles to the principal reinforcing of similar material, to prevent temperature cracks in the slab. Reinforcing mesh of equivalent strength may be used in place of reinforcing bars.

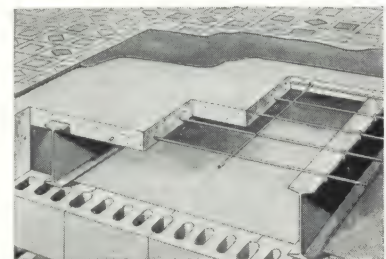


Figure 2-b

HOW TO LAY OUT A J & L JUNIOR BEAM FIRST FLOOR FOR A TYPICAL RESIDENCE

In the laying out of a house for Junior Beam Floors, approximately the same system that is used in placing wood supports can be applied to locating the steel beams and supporting columns. The main carrying beam is placed under the bearing partition. The Junior Beams are then located in the same manner as wooden joists. Junior Beams are doubled under non-bearing partitions. In framing a stairwell, a Junior Beam, supported by the standard stirrup hanger, serves as the header.

Fig. 3 shows the first floor architectural plan and the corresponding steel layout for a representative moderate priced house. The bearing partition separating the living room from the dining room and kitchen, supports the floor joists of the second floor and attic. Therefore, the main carrying member is located under this partition. In this house, the position of the stairwell prevents running the main carrying member from wall to wall, so it is stopped at the stairwell and supported by a basement column, either a pipe or H-column with plates welded or bolted on both top and bottom. Another main carrying member is placed across the projection at the front of the house.

The next step in laying out the steel is the locating of the Junior Beams that frame the stairwell. The flanges of these beams should be kept approximately 1 in. from the stair opening to allow for plastering. Next, two Junior Beams are located under each of the non-bearing partitions (the one partition separating dining room and kitchen and the other separating living room and stairway to second floor). The final step is the locating of the remaining Junior Beams necessary to carry the floor only, at spacings that are multiples of the width of the boards to be used for the concrete

form. For detail drawings of floor construction see pages 13 and 14.

The Junior Beam layout is based on the beam sizes and spacings shown in the table on page 11. The range of live loads in this table covers requirements of all the various building codes. In addition to these live loads, a dead load of 45 lbs. per square foot is provided for in the spacings given. The dead load is made up of:

Finished Flooring	4 lbs. per sq. ft.
Concrete	30 lbs. per sq. ft.
Junior Beams	3 lbs. per sq. ft.
Plaster ceiling	8 lbs. per sq. ft.

Total dead load.....45 lbs. per sq. ft.

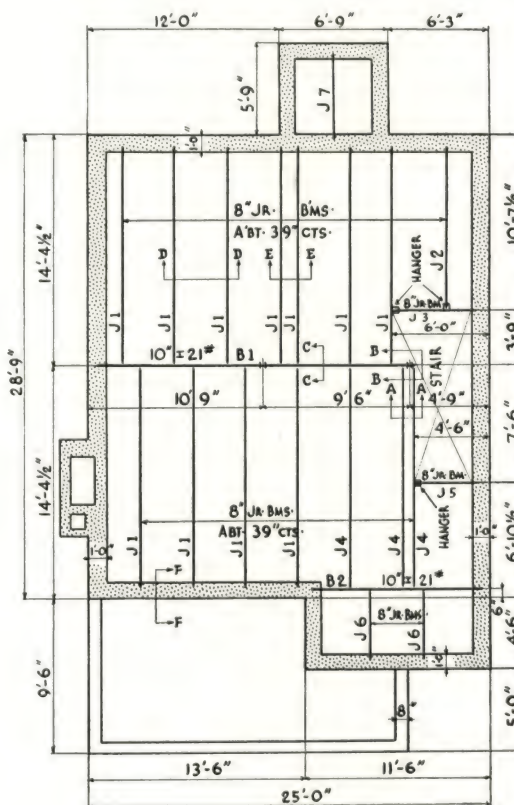
The spacings given in the table are based on the use of 8 in. common lumber (four, five or six boards between Junior Beams).

Use of Junior Beams of the same size throughout the floor represents the simplest construction. This eliminates need for end fabrication of the steel and for bringing foundation walls to different levels. Generally the saving in money on these two items will more than cover the extra cost of any excessive weight in the steel used. By referring again to the table it will be noted that the 8 in. Junior Beam can be used for spans up to 16 feet, and will meet the floor plan requirements of most moderately priced houses.

Occasionally a condition is encountered that obviously will overload a Junior Beam. Where this occurs the Junior Beam should be replaced by a standard I-beam of equal depth. Overloading of Junior Beams is most likely to result from use of tile floor and tile walls in bathrooms and from exceptionally wide stair openings.



First Floor Plan



First Floor Steel Plan

Figure 3

(For Construction Details at Section Points on First Floor Steel Plan refer to Pages 13 & 14)

TABLE OF JUNIOR BEAM SPACINGS
For Various Live Loads

Span	20 Lb. L. L.		30 Lb. L. L.		40 Lb. L. L.		50 Lb. L. L.		60 Lb. L. L.	
	Size ins.	Space ins.	Size ins.	Space ins.	Size ins.	Space ins.	Size ins.	Space ins.	Size ins.	Space ins.
12'-0"	6 7 8 9	31 46 46 46	6 7 8 9	31 46 46 46	— — — —	— — — —	— — — —	— — — —	— — — —	— — — —
13'-0"	6 7 8 9	31 39 46 46	— — — —	— — — —	— — — —	— — — —	— — — —	— — — —	— — — —	— — — —
14'-0"	7 8 9	39 46 46	7 8 9	31 46 46	8 9 10	39 46 46	8 9 10	31 39 46	8 9 10	31 39 46
15'-0"	7 8 9	31 46 46	8 9 10	39 46 46	8 9 10	31 39 46	8 9 10	31 39 46	9 10 11	31 46 46
16'-0"	8 9 10	39 46 46	8 9 10	31 39 46	8 9 10	31 39 46	9 10 11	31 46 46	9 10 11	31 39 46
17'-0"	8 9 10	31 39 46	8 9 10	31 39 46	9 10 11	31 46 46	9 10 11	31 39 46	10 11 12	31 46 46
18'-0"	8 9 10	31 39 46	9 10 11	31 46 46	9 10 11	31 39 46	10 11 12	31 46 46	10 11 12	31 39 46
19'-0"	9 10 11	31 46 46	9 10 11	31 39 46	10 11 12	31 46 46	10 11 12	31 39 46	11 12 —	31 46 —
20'-0"	9 10 11	31 39 46	10 11 12	31 46 46	10 11 12	31 39 46	11 12 —	31 46 —	11 12 —	31 39 —
21'-0"	10 11 12	39 46 46	10 11 12	31 39 46	11 12 —	31 46 —	11 12 —	31 39 —	12 — —	31 — —
22'-0"	11 12	39 46	11 12	31 46	11 12	31 39	11 12	31 39	12 —	31 —
23'-0"	11 12	39 46	11 12	31 39	11 12	31 39	12 —	31 —	12 —	31 —
24'-0"	12	39	12	39	12	31	12	31	12	29

NOTE:—When spacings are greater than 39", sleepers should be 2" x 4" laid flat, instead of the usual 2" x 3" beveled sleepers.

TYPICAL BILL OF MATERIALS

The bill of materials for the first floor of this typical house, made up from only the completely dimensioned foundation plan (Figure 3), is as follows:

- 1 piece 10" I 21 lb. x 20'-1" marked B1 (flat flange)
- 1 piece 10" I 21 lb. x 10'-6" marked B2 (flat flange)
- 11 pieces 8" Jr. Bms. x 13'-7¹/₄" marked J1
- 1 piece 8" Jr. Bm. x 9'-8¹/₂" marked J2
- 1 piece 8" Jr. Bm. x 5'-1" marked J3
- 3 pieces 8" Jr. Bms. x 13'-9" marked J4
- 1 piece 8" Jr. Bm. x 3'-7" marked J5
- 2 pieces 8" Jr. Bms. x 4'-2³/₄" marked J6
- 1 piece 8" Jr. Bm. x 5'-4" marked J7
- 2 pieces 4" H 13.8 lb. Cols. x 6'-8" with 8" x 1/2" x 8" Base Plate and 6" x 1/2" x 6" Cap Plate.
- 3 Standard stirrup hangers for 8" Jr. Bms. supported by 8" Jr. Bms.

1300 Lineal feet of 1/4" Round Reinforcing Bars.

450 Standard Plate Clips for Sleepers.

200 Reinforcing Bar Clips.

B1 and B2 to be punched with 13/16" holes staggered in top flange about 3'-0" apart.

1 Beam J1 and J4, and Beams J3 and J5 to be punched in web with 13/16" holes 2'-6" Cts. for attaching blocks around stairwell.

If flexible conduit is used all beams should be punched with 13/16" holes in webs about 4'-0" Cts.

The length given for the main carrying beam allows 6" bearing on the foundation wall and holds the other end, supported by columns, 1" from the stair opening. Junior Beams are specified at lengths that allow 3 1/2" bearing on foundation walls and approximately 3/4" clearance from center of main carrying member to allow for the web thickness of that section.

The Junior Beam stairwell headers (J3 and J5 on Figure 3) are cut to allow approximately 1/4" clearance between the ends of them and the edge of the flanges of the Junior Beams (J1 and J4 on Figure 3) on which they are supported by standard stirrup hangers. Note that in ordering standard stirrup hangers to support one beam at right angles to another, the size and type of both the beam to be supported and the carrying beam must be specified.

APPLYING THE J & L JUNIOR BEAM SYSTEM TO FLOORS ABOVE THE FIRST

In the preceding page the application of the Junior Beam system has been limited to the first floor, as a Junior Beam first floor may be installed in any house regardless of the materials used for frame and outside wall. The additional advantages of also having the Junior Beam system in floors above the first are available in any house having masonry walls or steel framing.

While Junior Beam floors throughout a house represent additional dead load, the footer course under foundation walls need not be wider than the usual 18 in. or 24 in., providing the soil will safely support a load of 3,000 lbs. per sq. ft. The load on exterior walls is about 4,500 lbs. per lin. ft. The load on the columns is 90 lbs. per sq. ft. of floor supported when the live load is calculated at 40 lbs. In this house, the center column supports 420

sq. ft. of floor, or about 36,000 lbs. and the column footing should be designed accordingly.

The vertical supports may be either regular pipe columns or 4 in. H-sections with plates welded or bolted on both top and bottom. Plates on the columns should not be wider than flange on the main carrying member the columns support. The only holes in all of this steel construction which must be located accurately are those in the flanges of the main carrying members providing for bolting these beams to the plates on the ends of the columns. As in Junior Beam first floor construction, Junior Beams throughout other floors are rested on masonry walls and bottom flanges of main carrying members, or are supported in standard hangers.

THE J & L JUNIOR BEAM SECOND FLOOR

The second floor architectural and steel plans (Fig. 4, next page) illustrate how the same beam arrangement used in the first floor is retained as far as possible in the second floor, with the main carrying member and supporting columns in the same relative positions. This allows for duplication in lengths of materials used in the two floors and also permits the builder to use much of his form lumber in the second floor just as he used it in the first floor.

The procedure in laying out the steel for the second floor is the

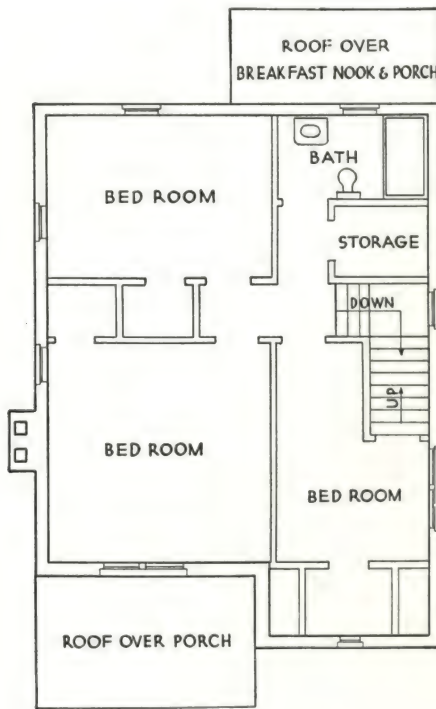
same as that followed in making up the bill of materials for the first floor. The main carrying member is located, the stairwell framed, Junior Beams doubled under non-bearing partitions and the remaining area spanned by Junior Beams spaced to correspond as nearly as possible with the first floor Junior Beam spacing. It will be noted that a header beam has been placed across the projection at the rear of the house, to support the wall above it, just as a similar header beam was placed across the projection at the front of the house in the first floor steel plan. Because of the addi-

tional load of bathroom floor and walls, an 8 in. standard I-beam is used in place of a Junior Beam at this point.

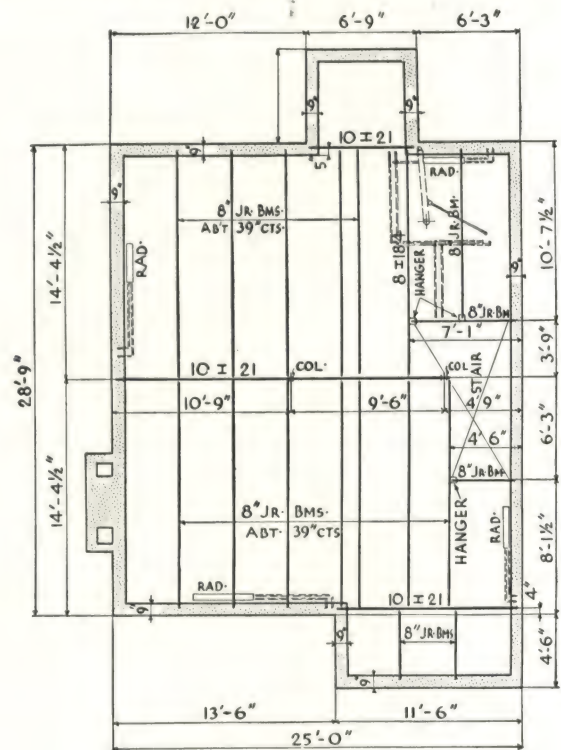
It will be seen from the location of radiators and bathroom fixtures, as shown in the steel plan, that it will be necessary for the

steam fitter and plumber to burn only a few holes in the webs of Junior Beams to accommodate piping.

As in the case of the foundation walls, the second floor walls are brought to an even elevation.



SECOND FLOOR PLAN



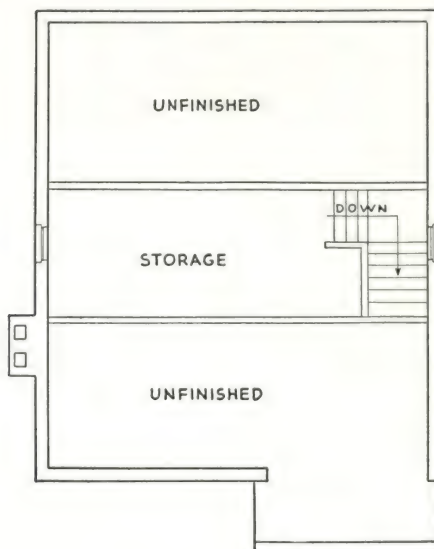
SECOND FLOOR STEEL PLAN

Figure 3

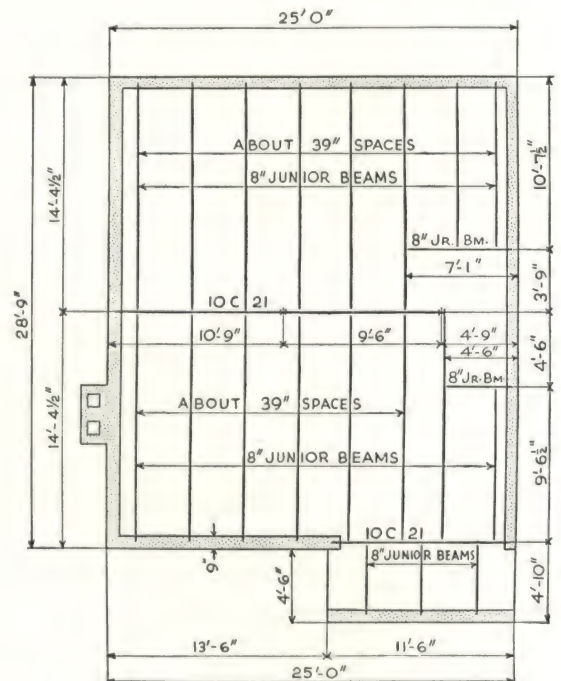
THE J & L JUNIOR BEAM ATTIC FLOOR

The architectural and steel plans (Fig. 4) for the attic illustrate the similarity between making up the bill of material for this floor and for the first and second floors. The principal difference be-

tween this floor and those under it is the absence of non-bearing partitions paralleling the Junior Beams in the attic, which makes it unnecessary to double the beams at any point.



ATTIC FLOOR PLAN



ATTIC STEEL PLAN

Figure 4

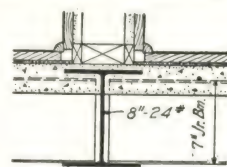
INSTALLATION DETAILS • J & L JUNIOR BEAM

Wood Finish Flooring on Sleepers

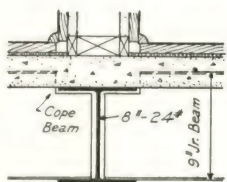
(For points at which sections are taken refer to First Floor Steel Plan, Page 10)

The large Section C-C shows 8-in. deep Junior Beams framing into a 10-in. flat flange girder. The Junior Beams rest directly on the flat lower flange of the girder without fabrication. Either 8-in. or 9-in. (see smaller Section C-C) frame into a 10-in. girder without coping. Wooden sleepers are fastened securely to the top flanges of the Junior Beams by two standard sleeper clips and steel reinforcing bars are attached with standard reinforcing rod clips. Where doorways are cut through the bearing partition, sole plates are omitted and the flooring runs over the girder without a break. Section D-D shows the construction of a typical bay and Section E-E shows the spacing of the Junior Beams at a non-bearing partition.

The vertical supports may be either regular (unfilled) pipe columns or 4-in. H-sections with plates bolted or welded on both top and bottom. Plates should be no wider than the girder flanges.

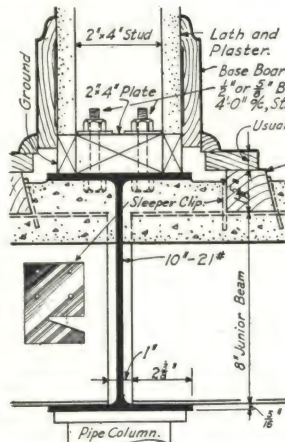


SEC. C-C USING 7" JR. BMS

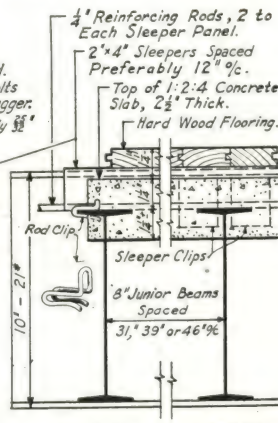


SEC. C-C USING 9" JR. BMS

Scale: $\frac{3}{4}$ " = 1'-0"



SECTION C-C THRU GIRDER AT BEARING PARTITION



SECTION D-D THRU TYPICAL BAY

Scale: $\frac{1}{2}$ " = 1'-0"

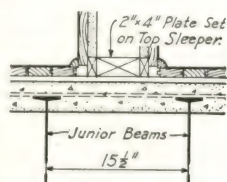
Wood or Other Types of Finish Flooring Set in Mastic

(For points at which sections are taken refer to First Floor Steel Plan, Page 10)

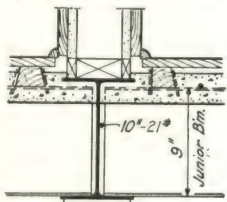
When the finished floor is to be linoleum, tile, terrazzo, wood parquetry blocks, or any material to be set in mastic, no sleepers are necessary. The concrete slab is floated smooth at the final pouring and requires no separate finish to receive the mastic. The finished flooring is then applied according to the manufacturer's directions. The 8-in. 24# flat flange section is used as a girder. The slab passes over the top of the main carrying member as shown in Section C-C.

When 8-in. or 9-in. Junior Beams are required to carry the load, they must be coped for framing into the 8-in. girder (see lower small Section C-C). The 7-in. Junior Beams can be framed without coping (see upper small Section C-C). Since the top flanges of the Junior Beams are held rigidly by the slab, no bridging is necessary to insure lateral rigidity. Section D-D shows construction of typical bay.

The vertical supports may be either regular pipe columns or 4-in. H-sections with plates welded or bolted on both top and bottom. Plates should be no wider than the girder flange.

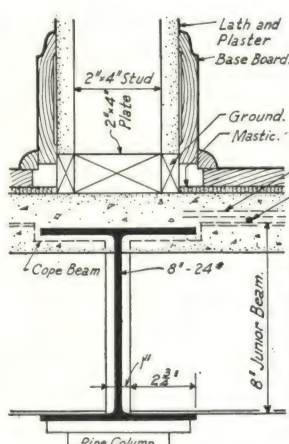


SECTION E-E THRU NON-BEARING PARTITION

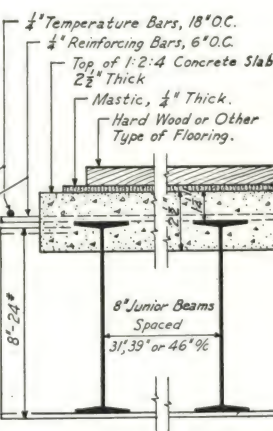


SECTION C-C USING 9" JUNIOR BEAMS

Scale: $\frac{3}{4}$ " = 1'-0"



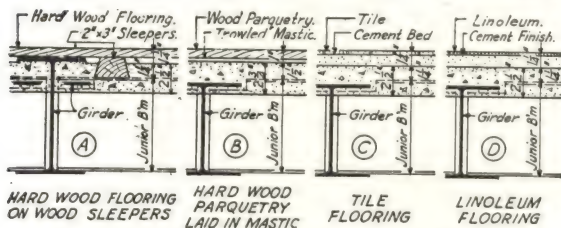
SECTION C-C THRU GIRDER AT BEARING PARTITION



SECTION D-D THRU TYPICAL BAY

Scale: $\frac{1}{2}$ " = 1'-0"

Various Floor and Ceiling Treatments



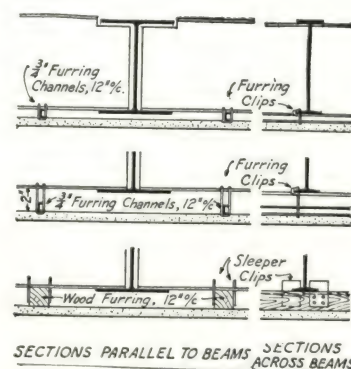
At "A" above is shown hardwood flooring applied to sleepers. With a 10 in. girder, it is necessary to use 8 in. or larger Junior Beams. This is so that 2 in. by 3 in. sleepers will carry the finish flooring over the top flange of the girder. With an 8 in. girder any size Junior Beams may be used that satisfy the requirements of the load to be carried.

At "B" is shown hardwood parquetry block flooring set in mastic, and made to line with the construction at "A" by making the slab $\frac{1}{4}$ in. thicker. Parquetry block floors not required to line with wood flooring on sleepers would have the usual $2\frac{1}{2}$ in. slab.

Details "C" and "D" show how tile or linoleum floors are made to line with the wood floor, in cases where they are used for baths, kitchens, etc.

For ordinary basement ceilings, J & L Junior Beam

construction presents a neat and acceptable appearance. Where special rooms require a plastered ceiling, the construction is rendered very simple by the use of standard J & L furring clips, (see illustration). These are made in four sizes to permit a clearance of $\frac{3}{4}$ in., 1 in., $1\frac{1}{2}$ in., or 2 in. between the bottoms of the beams and the plaster. The installation of electric conduit may be handled in several different ways. It may be imbedded in the concrete slab. Flexible conduit may be run through holes punched at the neutral axis in the webs of the Junior Beams. Flexible conduit may be run between the plaster and the bottoms of the Junior Beams by the use of the standard furring clips. Rigid conduit may be fastened to the bottom flanges of the Junior Beams, in which case, if a plaster ceiling is to be applied, the 2 in. furring clips are used to give ample room. For ceiling finishes that must be held in place by nails, furring strips are fastened to the bottom flanges by inverting the standard sleeper clips.



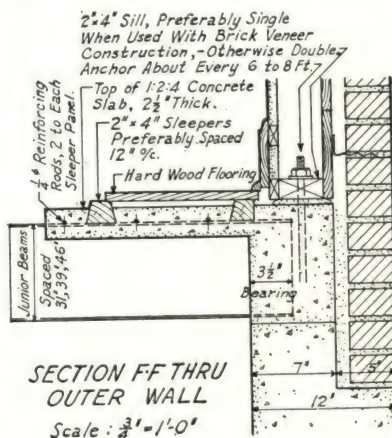
INSTALLATION DETAILS • J & L JUNIOR BEAM

Details of End Bearing on Foundation

(For points at which sections are taken refer to First Floor Steel Plan, Page 10)

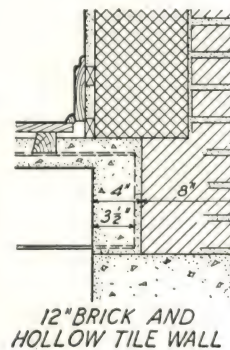
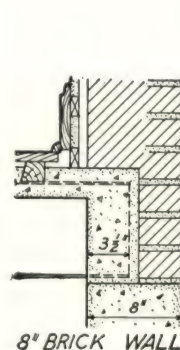
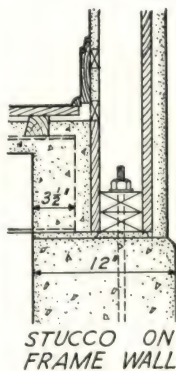
Since the top of the foundation wall on which the Junior Beams have their bearing may be irregular or uneven, it becomes necessary to level them by shimming. Cement grout or wooden wedges may be used as leveling material, since the beams are held by their upper flanges as soon as the concrete has attained its set, and the material used for shimming carries no load.

The sill details shown indicate the complete firestopping obtained with this construction. It is at the sill that a great deal of the harmful shrinkage occurs in the ordinary wood-framed house. The J & L Junior Beam floor does not shrink. It is rigid, vibration-free, and shrink-proof.



In the section showing brick veneer construction, the floor must be in place before the wall framing is erected.

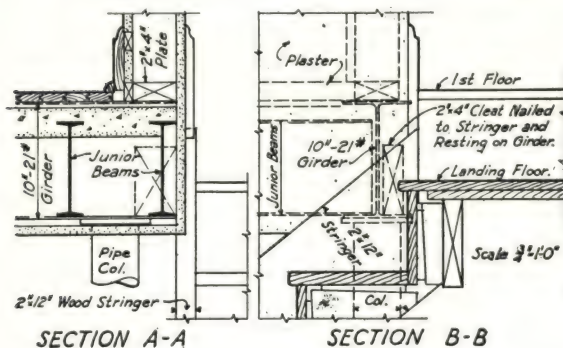
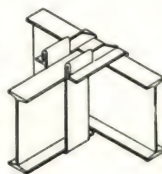
The drawings show hardwood flooring on sleepers, but the sill construction is similar for any type of finished flooring.



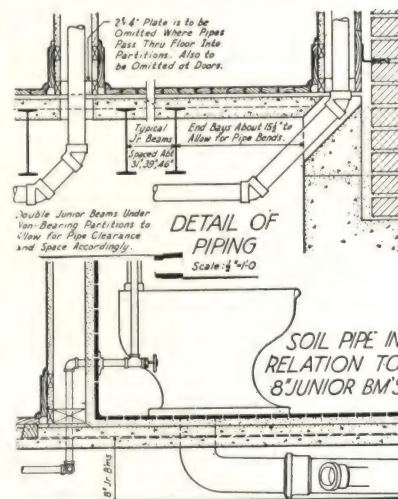
Stair Details and Plumbing Pipes

(For points at which sections are taken refer to First Floor Steel Plan, Page 10)

For supporting a Junior Beam at right angles to another Junior Beam or standard I-beam, a standard stirrup hanger is employed. This is not a fixed connection. The stirrup hanger keeps the top flanges of the beams flush. It is used for framing headers and trimming around stair openings, chimney openings, etc.



At the right is shown how pipes are carried through the concrete floor slab and into non-bearing partitions. Pipe sleeves or boxes are set in the concrete form to maintain a seal between basement and the floors above. In houses having a hot air system, the ducts enter non-bearing partitions in a similar manner. Where pipe is carried into the outside wall, the opening thru the firestop is provided by setting a pipe sleeve inside the concrete form. The first Junior Beam must be placed at least 10 in. from the wall to give the plumber room in which to work.



SPECIFICATIONS FOR J & L JUNIOR BEAM FLOOR FOR RESIDENCES

1. Jones & Laughlin Junior Beams of the size and at the spacings as shown on the plans shall be used to support the (first) (first and second) (first, second and third) floors.

2. Two Junior Beams, spaced to provide for piping, shall be used under non-bearing partitions running parallel with Junior Beams.

3. The main carrying beam (or beams) and columns under bearing partitions shall be as shown.

If bearing partition plate is to be bolted to main carrying member:

4. Main carrying beam (or beams) shall be punched in top flange with 13/16 in. holes about 4 ft. 0 in. centers staggered.

If flexible conduit is to be used:

5. Junior Beams and main carrying beam (or beams) shall be punched in webs with 13/16 in. holes about 4 ft. 0 in. centers.

6. Beams framing stairwell shall be punched in webs with 13/16 in. holes to provide for blocking.

7. Bearing of steel on walls shall be 6 in. for main carrying beam (or beams) and a minimum of 3 1/2 in. for Junior Beams.

8. All steel shall have one shop coat of paint.

9. Concrete forms shall be built so that the bottom of the concrete slab will be approximately 1 1/4 in. below the tops of Junior Beams. (See "J & L Junior Beams for Residences" published 1935 by Jones & Laughlin Steel Corporation, for recommended form construction.)

SPECIFICATIONS FOR J & L JUNIOR BEAM FLOOR FOR RESIDENCES (Continued)

If wood flooring is to be nailed or pegged to sleepers:

10. Beveled 2 in. by 3 in. sleepers (2 in. by 4 in. sleepers laid flat) spaced at (12 in.) (16 in.) centers, shall be placed directly on top of flanges of Junior Beams and fastened securely to each beam by two standard plate clips, one on each side of sleeper. Concrete reinforcing shall be $\frac{1}{4}$ in. round steel reinforcing bars spaced at 6 in. centers and fastened to top flanges of Junior Beams by reinforcing bar clips. Floor shall be leveled after forms, sleepers and reinforcing bars are in place.

If finished flooring is to be set in mastic:

11. Concrete slab shall be floated smooth at time of pouring. Concrete reinforcing shall be $\frac{1}{4}$ in. round steel bars spaced at 6 in. centers and fastened to top flanges of Junior Beams by reinforcing bar clips. Temperature reinforcing shall be $\frac{1}{4}$ in. steel reinforcing bars spaced at 18 in. centers and placed at right angles to main reinforcing. Steel mesh of equivalent strength may be used in place of $\frac{1}{4}$ in. steel reinforcing bars. Floor shall be leveled after forms and reinforcing are in place.

If construction is to be frame or veneered walls:

12. Firestop around outside walls shall be constructed as shown on the plans and shall be continuous around entire building. (See "J & L Junior Beam Floors for Residences" for firestop details.)

13. Sleeves or boxes shall be placed in concrete formwork to accommodate piping which will pass through concrete floors and concrete firestop.

14. The concrete slab shall be a 1-2-4 mix with pea gravel or crushed aggregate not exceeding $\frac{1}{2}$ in. in size. Concrete shall be of a consistency that, when poured, it may be worked well under top flanges of Junior Beams (and under sleepers. Concrete shall be leveled approximately $\frac{1}{4}$ in. below tops of sleepers.) When forms are stripped, under side of slab shall present an even surface free from honeycombing or spalling under beam flanges.

If new lumber is used for forms:

15. Form lumber, after being stripped, may be used for roof sheathing.

TYPICAL RESIDENCES HAVING J & L JUNIOR BEAM FLOORS



RESIDENCES, CYNWYD, PA.

Architect: Max A. Bernhardt

Builder: L. H. Greenhouse & Co.



RESIDENCE, EVANSTON, ILL.

Architect: Raymond F. Houlihan

Builder: C. A. Hemphill

RESIDENCE, SOUTH ORANGE, N. J.

Owner: A. Burton Cohen

Architect: Thomas Paterson, Jr.



RESIDENCE, LEXINGTON, MASS.

Architect: Howland S. Chandler

Builder: Custance Brothers



JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

GENERAL OFFICES

Jones & Laughlin Building, Pittsburgh, Pa.

SALES OFFICES

Atlanta.....	Healey Building	Los Angeles.....	Roosevelt Building
Boston.....	250 Stuart Street	Memphis.....	1 Auction Avenue
Buffalo.....	Liberty Bank Building	Milwaukee.....	Bankers Building
Chicago.....	111 W. Washington Street	Minneapolis.....	1010 Phoenix Building
Cincinnati.....	Carew Tower	New Orleans..	N. Miro & Japonica Streets
Cleveland.....	Union Trust Building	New York.....	500 Fifth Avenue
Dallas.....	Magnolia Building	Philadelphia..	Broad St. Station Building
Denver....	832 Continental Oil Building	Pittsburgh...	Jones & Laughlin Building
Detroit.....	Fisher Building	St. Louis.....	Boatmen's Bank Building
Erie.....	Erie Trust Building	San Francisco....	Standard Oil Building

CANADIAN REPRESENTATIVES

JONES & LAUGHLIN STEEL PRODUCTS COMPANY
Pittsburgh, Pa., U. S. A.

Toronto Daily Star Building, Toronto, Ont., Canada

J & L WAREHOUSES

Chicago
New Orleans

Cincinnati
New York (Long Island City)*

Detroit

Memphis
Pittsburgh

FABRICATING WORKS

New Orleans

New York (Long Island City)*

Pittsburgh

*Operated by National Bridge Works Division
of Jones & Laughlin Steel Service, Inc.

KALMAN STEEL CORPORATION

SUBSIDIARY OF BETHLEHEM STEEL CORPORATION

Manufacturers of Steel Joists and Expanded Steel Studs

GENERAL OFFICES
BETHLEHEM, PA.

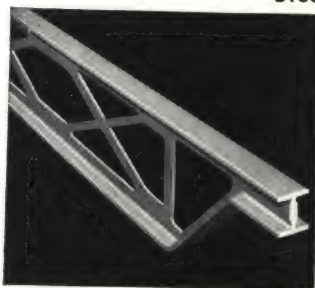
For Other Offices, see our page on Concrete Reinforcement

Products

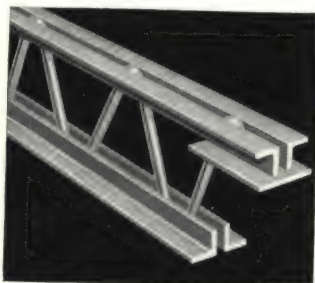
KALMAN STEEL JOISTS, MACMAR STEEL JOISTS, LONGSPAN JOISTS, RIGID BRIDGING, KALMAN STEEL STUDS, and Accessories.

For pages on Kalman Concrete Reinforcement Products and Steel Door Frames, see File Index.

Steel Joists



Kalman Steel Joist—End View

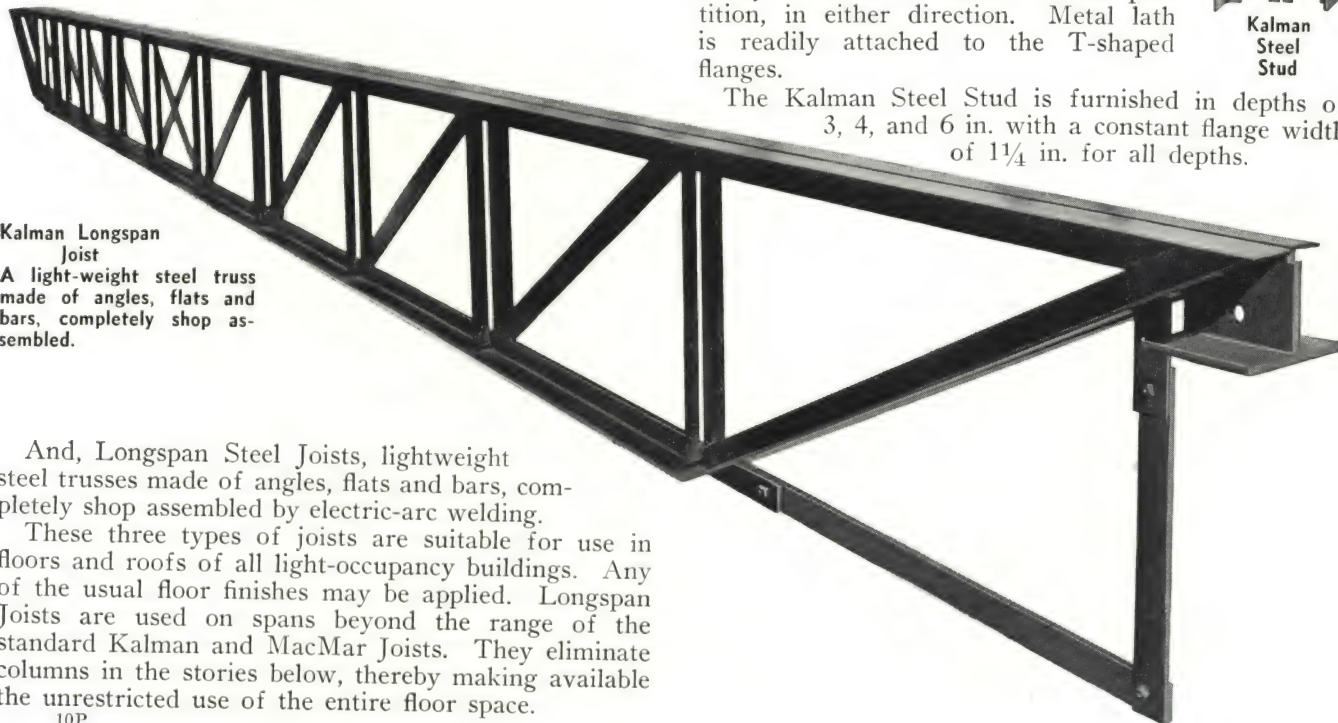


Mac Mar Steel Joist—End View

Kalman manufactures three types of steel joists. These are:

Kalman Steel Joists, expanded one-piece light-weight steel trusses, made from one solid piece by a continuous hot slitting and rolling process.

MacMar Joists, steel trusses composed of angle chords and continuous bar web and assembled by the pressure-welding method.



Kalman Longspan Joist

A light-weight steel truss made of angles, flats and bars, completely shop assembled.

And, Longspan Steel Joists, lightweight steel trusses made of angles, flats and bars, completely shop assembled by electric-arc welding.

These three types of joists are suitable for use in floors and roofs of all light-occupancy buildings. Any of the usual floor finishes may be applied. Longspan Joists are used on spans beyond the range of the standard Kalman and MacMar Joists. They eliminate columns in the stories below, thereby making available the unrestricted use of the entire floor space.



In combination with concrete floor slabs and plastered ceilings, they provide rigid, permanent fireproof construction at moderate cost.

Depths—Kalman and MacMar Joists—8 to 16 in., varying by 2 in. Longspan Joists—18 to 32 in., varying by 2 in. Clear Spans—Kalman and MacMar Joists—Up to 32 ft. Longspan Joists—Up to 64 ft.

Steel Studs

Kalman Steel Studs are one-piece, load-bearing members made by a continuous hot-slitting and rolling process. They find application in partitions in all types of fireproof construction, and especially in exterior walls and interior bearing walls of dwellings and other light-occupancy structures.

Combined with metal lath and plaster, the Kalman Steel Stud provides a partition that is economical to build, light in weight, non-shrinking, and soundproof. It may be used as exterior wall material in connection with stucco or masonry veneer. Piping and conduit are run freely within the hollow wall or partition, in either direction. Metal lath is readily attached to the T-shaped flanges.

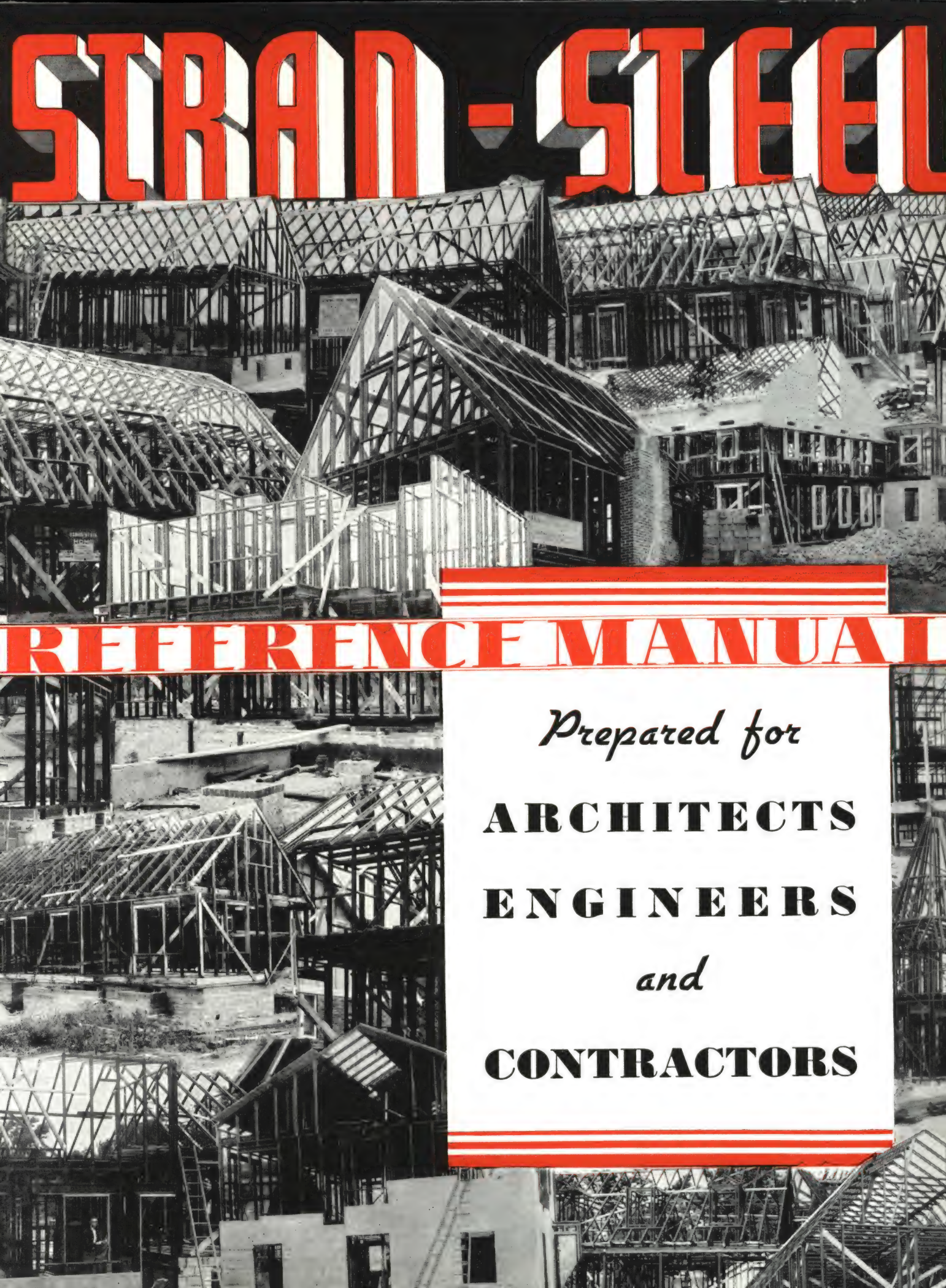
The Kalman Steel Stud is furnished in depths of 3, 4, and 6 in. with a constant flange width of 1 1/4 in. for all depths.



Kalman Steel Stud

MEMORANDA

STRAN - STEEL



REFERENCE MANUAL

Prepared for
ARCHITECTS
ENGINEERS
and
CONTRACTORS

PROGRESS — *the* KEY to INDUSTRIAL SUCCESS

Home building, for generations, has shown wide fluctuations in volume. It has always been a business of booms and slumps, lacking those stabilizing elements of real *progress* which have been responsible for the steady growth of other major industries.

During the years 1931 to 1934 inclusive, the volume of home building all but disappeared. Changes in design, appointments and equipment failed to stimulate any appreciable recovery. Gradually, designers and builders of houses learned that the public would no longer buy, nor would sources of building money finance homes which were neither safe as abodes nor secure as investments. They realized that home values had not kept pace with the improved values offered by the more progressive industries. In short, homes could no longer compete for a major portion of the nation's savings.

The STRAN-STEEL Corporation, subsidiary of one of the oldest and largest manufacturers in the automotive industry, has applied to the home-building industry the same type of research which has for years been a major factor in lessening the severity of slumps in the automobile business. The object of this research was to improve the raw materials in order that the finished product—new homes—might keep pace with improved values in other lines of merchandise and again compete for a major portion of the public's savings. The results of this research are now well known to most people connected with the building industry.

The success of STRAN-STEEL has not depended upon "revolutionizing" home building. Its acceptance upsets no established trade nor attempts to substitute for successful practices the dreams and theories of visionaries. Its rapidly increasing use by architects and builders is the sign of *real progress*. A very old industry has found STRAN-STEEL a *key* to *new success*.

HOME OFFICE, DETROIT, MICHIGAN



**STRAN-STEEL
CORPORATION**

6100 MCGRAW AVE., DETROIT

DEALERS IN MOST
PRINCIPAL CITIES





● Specification of STRAN-STEEL and fire-safe construction for the house shown above was made after the foundations were finished. The change did not alter a single dimension or delay completion.

WHAT IT IS—STRAN-STEEL is a light gauge, exceedingly strong steel framing material for houses, partitions and all light loadbearing structures. It is not to be confused with standard structural steel which is used in the framing of relatively large buildings. A feature of its design (see phantom illustration below) permits nailing collateral materials directly to the steel. STRAN-STEEL is supplied in the form of joists, studs, rafters and plates (see page 8) and is carried in stock in standard lengths (see table, page 12). It is shop-coated with an adhesive finish which protects it so thoroughly that no field painting is required.

HOW IT IS USED—Since STRAN-STEEL is produced to conform to the established dimensions of the materials which it replaces, its use requires no changes in architectural plans or dimensions. STRAN-STEEL permits the use of all standard exterior and interior materials and finishes. It is erected easily and rapidly by anyone skilled in carpentry. Connections are made by simple attachments (see page 9), screw driver, and metal screws. No welding is required.

Framing a building with STRAN-STEEL follows the traditional practice closely, except that all members are ordinarily spaced on two-foot centers. This reduces the number of members used and materially simplifies certain subsequent operations such as duct work. Foundation thicknesses are unchanged. Standard STRAN-STEEL specifications are shown in condensed form on page 10. STRAN-STEEL is used in many ways other than in house construction; some interesting industrial uses are illustrated and described on page 11.

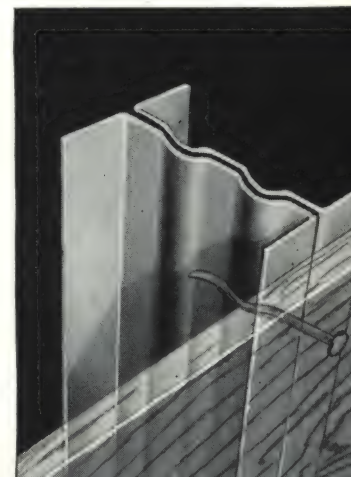
WHAT IT DOES—STRAN-STEEL framing used with concrete sub-floors (see pages 2 and 3) and fire-safe collateral materials makes a wholly fire-safe structure. The steel framework being grounded by soil pipes, water pipes, etc., the entire struc-

ture is completely lightning-proof. (Radio reception, however, is not affected.) STRAN-STEEL framing entirely eliminates joist and stud shrinkage with its attendant plaster cracks, warped floors and sticking doors and windows. A STRAN-STEEL structure remains indefinitely exactly as built—a credit to its designer and builder—a source of satisfaction and security to its owner. STRAN-STEEL, obviously, is *termite-proof*.

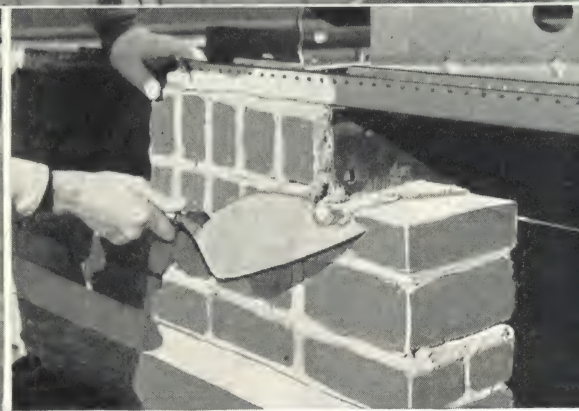
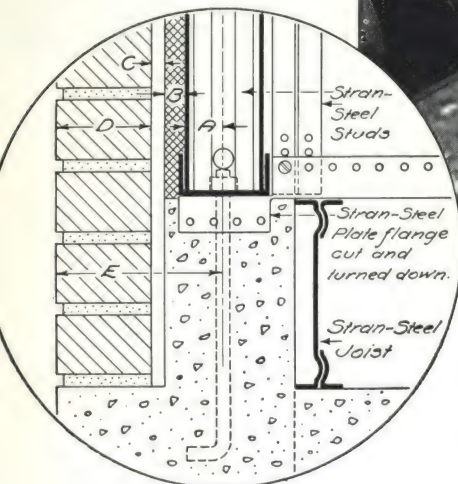
HOW IT IS SOLD—STRAN-STEEL is sold by the lineal foot. It is stocked in standard lengths (see table, page 12). The plate and half-stud (illustrated on page 8) are stocked and shipped in 20-foot lengths and cut with a hack saw. STRAN-STEEL is handled through 120 dealers in most principal cities. Plans may be submitted to these dealers or may be sent directly to the company for estimates. Delivery may usually be made either by truck or freight within a few days to nearly any part of the country.

WHAT IT COSTS—STRAN-STEEL and fire-safe construction costs, in most localities, about the same as solid masonry construction, and of course permits much greater latitude in the matter of design, wall and roof construction and insulation. When the savings in maintenance, repairs and insurance are calculated over the entire financing period, STRAN-STEEL fire-safe construction presents decided economies. As additional advantages, the safety of the occupants and the security of resale value are important.

● Phantom view showing how collateral materials are nailed directly to STRAN-STEEL. (Feature patented in U. S. and foreign countries.)



FLOOR and WALL CONSTRUCTION



● **Top:** Stapling metal lath directly to STRAN-STEEL joists before pouring 2-in. concrete sub-floor. **Left:** Diagram showing the four dimensions, A, B, C, and D which, added together give the distance (E) from center line of anchor bolts to exterior face of finished wall; drawing shows brick veneer construction with standard plate, dimension E equaling 7 in. **Center:** Anchor bolts set in foundation wall approximately 4 ft. on center, but not closer than 12 in. to corners. **Right:** Bricking in ends of STRAN-STEEL joists.

STRAN-STEEL SHRINK-PROOF

STEEL FOR PERMANENCY—Floor construction is of great importance in the elimination of shrinkage damage as well as in the protection of the entire structure against fire hazards. STRAN-STEEL framing permanently eliminates shrinkage and warpage and also makes possible new economies in fire-safe floor construction.

FIRE-STOP FLOORS WITH STRAN-STEEL—House construction can no longer be classed as modern which does not include fire-safe floors at first and second stories. STRAN-STEEL is particularly adaptable to this type of construction. A 4-lb. ribbed or wire reinforced lath procurable in 8 ft. 2 in. lengths is stapled directly to the tops of STRAN-STEEL joists. On this is poured a 2-in. concrete slab (2000 lbs., 1-3-4 mix). Concrete subfloors correctly laid are safe, permanent and virtually sound-proof.

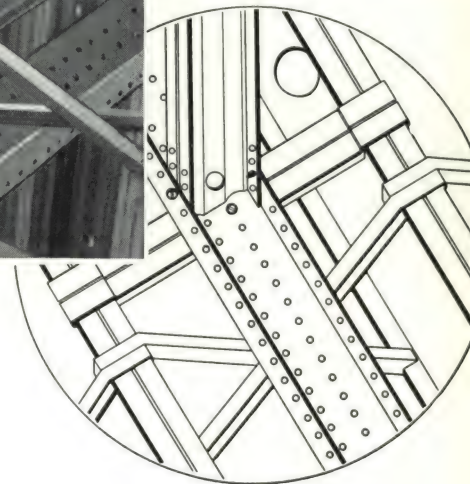
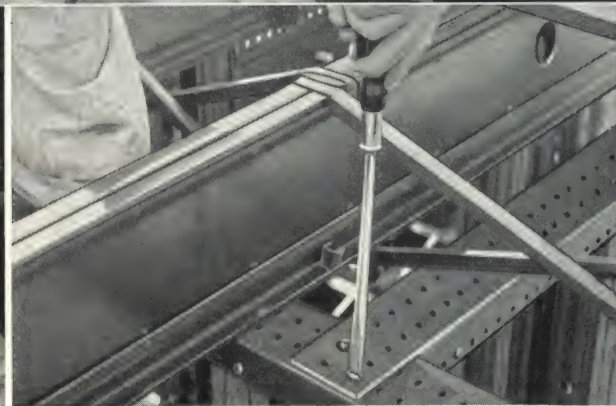
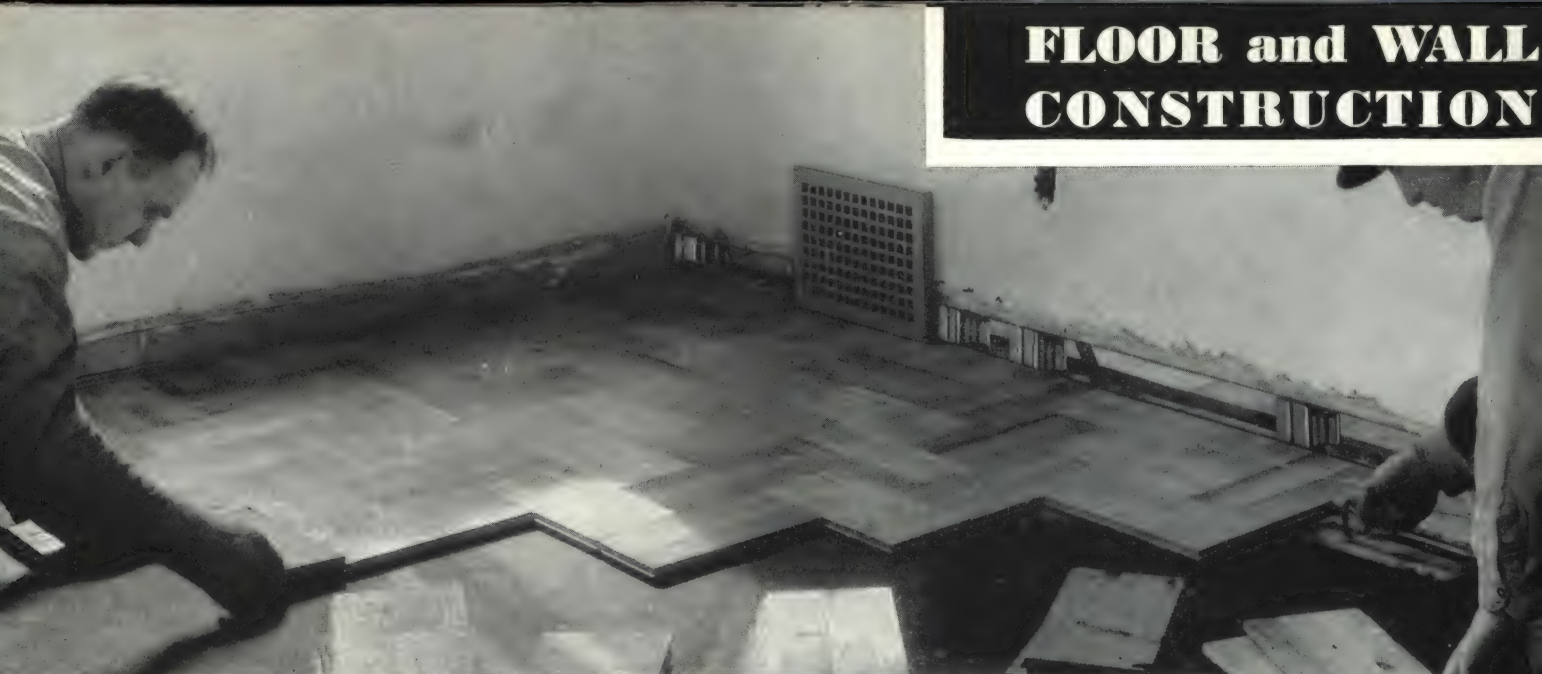
SETTING STRAN-STEEL JOISTS—STRAN-STEEL floor framing parallels conventional practice exactly. STRAN-STEEL joists are all 8 in. deep and vary only in the thickness or gauge of the steel. Longer spans and heavier loads require heavier gauge steel (see table, page 13). The 8-in. uniform depth permits lower roof lines without sacrifice of ceiling heights and saves from two to four inches of all collateral materials at each story. Outside foundation walls running parallel to joists are

laid up 8 in. higher than walls on which the joists are set. Joists are ordinarily spaced 24 in. on centers and ends are bricked in or closed with concrete backup fill. Joists are easily framed into each other by means of joist hangers (shown on page 9).

SETTING ANCHOR BOLTS—Anchor bolts should conform in diameter, length and spacing to local building codes. Usually ½-in. bolts approximately 4 ft. apart are used. Bolts 12 in. long are recommended for poured foundation walls, 16 in. where masonry units are used. Bolts should extend 1 in. above level of joist tops and not closer to corners than 12 in. In outer walls, anchor bolts should be set on either side of heater ducts and door openings. Distance from outside finish wall to center line of anchor bolts is easily calculated. (See illustration above.) Absolute accuracy in setting anchor bolts is not essential since holes in plate are punched on the job.

BRIDGING—STRAN-STEEL bridging (see page 9) is formed from light, rigid channel. It is notched at both ends to engage joist flanges and is easily and rapidly attached.

STRAN-STEEL PLATE—The plate in STRAN-STEEL framing serves the same purpose as the plate in ordinary construction. It is a 16-gauge channel to which the studs are attached. It is punched at intervals of one inch to permit the use of steel attach-



FIRE-SAFE, PERMANENT

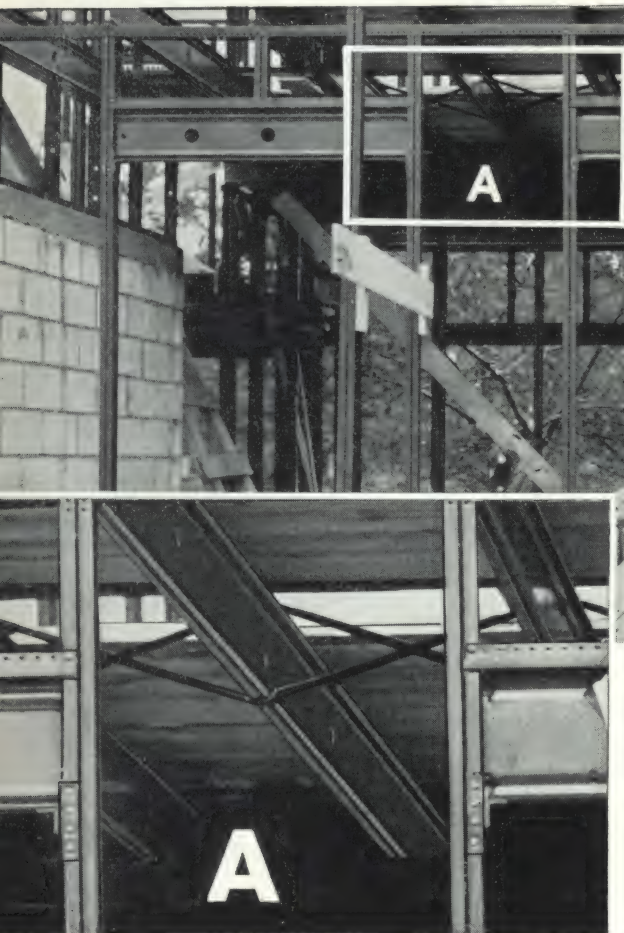
● *Top:* Laying wood block finish floor in mastic on concrete sub-floor. *Left:* Wall panels are assembled in convenient sections before raising; when complete, the panel is raised and each stud fastened into bottom plate with attaching screws. *Center:* Lapping and connecting intersecting plate at upper corner. *Right:* Method of supporting a STRAN-STEEL nonbearing partition running parallel to and between floor joists; note partition support used under each stud in partition.

ing screws. STRAN-STEEL plate is furnished in two widths (see page 8). The standard plate is used with STRAN-STEEL $3\frac{5}{8}$ -in. studs; the narrow plate is used with STRAN-STEEL $2\frac{1}{8}$ -in. studs. Both plates are shipped in 20-ft. lengths and are easily cut to length with a hand hacksaw at the job, thus permitting the contractor to compensate for variations in foundation dimensions or anchor bolt settings. All upper plate should be laid out exactly from the lower plate immediately beneath it. This insures vertical alignment of holes and plumb studs. (See illustration No. 4, page 5.) Parallel plates should be laid out in a similar manner to assure lateral alignment of studs in outside wall and inside partitions. Plates are lapped at corners by hacksawing through and bending out or cutting off the flanges of one. (See illustration above.)

STRAN-STEEL EXTERIOR WALLS—STRAN-STEEL with brick or stone veneer, stucco or any of the newer exterior materials, permits a type of construction which is as permanent as solid masonry, is shrink-proof, termite-proof and lightning-proof. It also permits the construction of moisture-proof walls, and the use of exterior insulating sheathing and fill insulation if desired.

FRAMING STRAN-STEEL WALLS—Framing walls with STRAN-STEEL follows conventional practice very closely. Steel attachment screws rapidly and rigidly secure the studs to the plates. Studs are spaced on 24-in. centers over joists. Two screws in diagonally opposite flanges of the stud form the connection at top and bottom. STRAN-STEEL studs are manufactured in two widths, $3\frac{5}{8}$ and $2\frac{1}{8}$ in. The former are designed for buildings not exceeding three stories. The latter may be used for full two-story construction. Studs are assembled to upper plates; as wall sections are raised, (see illustration above) bottoms of studs drop into bottom plates and are secured by screws. Outside walls running parallel to joists are framed 8 in. higher than walls which support joists, to level with tops of joists. Partitions which do not support joists and which run parallel to (and between) joists are supported by partition supports (see drawing above); the two joists to which partition supports are attached must be increased two gauges in thickness to carry the additional weight of the partition. Where there are no heat or plumbing stacks and the partition is directly over a joist, the lower plate is omitted, the joist is doubled, and the partition studs are attached with 2-in. sections of plate secured directly to the joists.

FRAMING WALL OPENINGS



● Above: First story framed with STRAN-STEEL; note 8-in. joists used as headers above openings, also plate used as sills under windows with flanges down, and above headers with flanges up to receive ends of jack studs. Left: Insert A, enlarged to show header brackets connecting headers to adjacent studs; note how flanges of plate are connected to stud flanges with attaching screws, after slotting web of plate at each corner.

FRAMING DOOR and SIMPLE and RAPID

FURTHER ADVANTAGES OF STRAN-STEEL—Openings are as simple to frame in STRAN-STEEL as in conventional construction with these additional advantages: (1) openings remain true and square as framed; (2) size and locations of openings may be altered to suit conditions arising on the job by merely removing and replacing a few attaching screws.

HEADER BRACKETS—Header brackets (see page 11) are located and attached to studs before studs are erected. Four holes are factory-punched in each flange of header brackets for attachment to stud and header flange. After locating position of brackets, $\frac{1}{8}$ -in. holes are hand-punched in the stud flanges for securing brackets. Ends of joist header should be 1 in. and ends of header and sill plates $\frac{1}{2}$ in. from center lines of supporting studs.

A minimum of three screws to each side of each header bracket is used. On headers carrying heavy loads four screws should be used on each side.

HEADER CONSTRUCTION—Headers for openings in load-bearing walls use STRAN-STEEL 8-in. joists, gauge being determined by loads. To the top of the joist header is nailed a section of STRAN-STEEL plate, flanges up, to receive jack studs. The web of this plate is slotted $\frac{7}{8}$ in. with a hacksaw, close to flange at each corner. Into these slots extend the flanges of the supporting studs and are secured with attaching screws. For headers over most openings in non-bearing walls and partitions, as well as for sills under windows only the plate is used. Joist headers are cut 2 in. shorter than center-to-center dimensions of the supporting studs. Header and sill plates are cut $\frac{1}{2}$ in. shorter than center-to-center dimensions of the supporting studs. Holes

in sill plates and plates over headers should be aligned vertically with upper and lower plates.

JAMB STUDS—Either of the studs supporting headers may serve as jamb studs. Generally, to correctly locate openings, additional studs are run from bottom of header to sill plates in window openings or bottom plate in door openings. These serve as jamb studs and are attached to plate headers and window sills with 2-in. sections of plate and to joist headers with rafter clips (see page 9).

ALLOWANCE FOR DOORS AND WINDOWS—Distance from center to center to STRAN-STEEL jamb studs is 4 in. greater than the width of clear (rough) opening ordinarily allowed in wood frame construction. Bottom of STRAN-STEEL headers should be $1\frac{1}{8}$ in. higher to allow for wood bucks, plus 2 in. higher to allow for concrete subfloor, than is ordinarily allowed in wood frame construction.

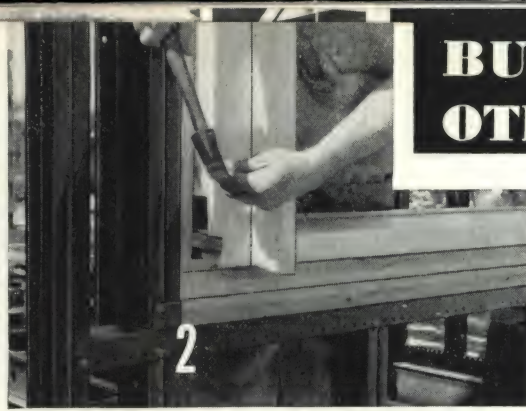
ALLOWANCE AROUND STAIR WELLS—Centers of STRAN-STEEL joists running parallel to stair stringers are set back 2 in. from face of rough opening to allow for wood bucks inserted between joist flanges. Stair trim is nailed to these bucks.

ALLOWANCE FOR PLASTER BASE—Savings in labor and material directly resulting from the shrink-proof quality of STRAN-STEEL are affected in the application of plaster base and base grounds where continuous walls are intersected by partitions. Plaster base and grounds may be run behind corner studs of intersecting partition by setting these studs back one inch from face of continuous wall. This eliminates backing and cutting of plaster base at corner.

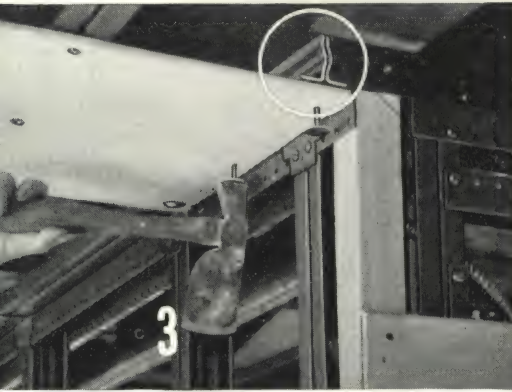
BUCKS, NAILERS OTHER MATERIALS



1



2



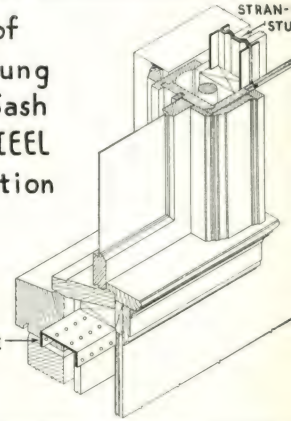
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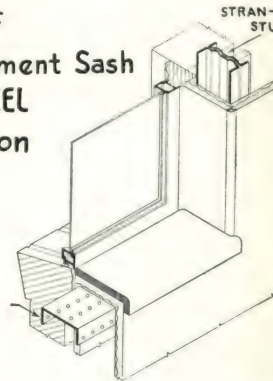
4

● 1—Reinforcing stud corners with corner bracket. 2—Nailing wood casing to wood bucks, the latter attached with nails through flanges of STRAN-STEEL stud and holes in sill plate. 3—STRAN-STEEL half-stud used as lath backing in ceiling corner between joists. 4—Aligning holes in upper and lower plates before cutting to length. Detail drawings show methods of framing window casings into STRAN-STEEL brick veneer construction.

Detail of
Double Hung
Wood Sash
in STRAN-STEEL
Construction



Detail of
Steel Casement Sash
in STRAN-STEEL
Construction



WINDOW OPENINGS with STRAN-STEEL

FRAMING DOORS AND WINDOWS—Door and window frames are attached to STRAN-STEEL by means of rough wood bucks placed between flanges of jamb studs, under joist headers, and over window sill plates where wood stool is used.

BUCKS—These are purchased locally. They are ripped to fit between flanges of studs adjacent to openings. Where the standard studs are used the buck is ripped to $3\frac{7}{8}$ in. from a standard wood 2 x 4. Where bucks are to be used with narrow studs for greatest economy these are ripped from a standard wood 2 x 8. Holes for nailing bucks in place are hand-punched in opposite flanges of studs; space holes about four inches from each end of bucks and approximately every 12 in. between end nails. Holes for these nails are hand-punched along center line of plate, one near each end and approximately 1 in. apart between end holes.

PLASTER BASE GROUNDS—Base grounds, 1 x 4 or 1 x 6, depending upon width of baseboard, are recommended to provide adequate nailing for base.

CORNER NAILERS—Where sheathing or exterior insulating material is used, adequate nailing is provided by STRAN-STEEL half studs (see illustration No. 1, above). Corner nailing may also be provided by wood 2 x 2's at exterior corners; at interior corners they furnish a convenient base for attaching corner bead.

PLASTER BOARD AND INSULATING

—All insulating sheathing and plaster board is attached rapidly

and securely to STRAN-STEEL by nails which penetrate $1\frac{1}{4}$ in. or more into nailing groove. Nail heads should be sufficiently large to prevent their pulling through and also allow them to firmly hold adjacent edges of plaster or insulating board where joints occur at center of stud. A most satisfactory nail for this purpose is carried in stock. (See page 9.)

LATH BACKING AT CEILING—When lath backing is required at tops of partitions running parallel to joists, STRAN-STEEL half studs are used (see illustration No. 3 above). At the ends they are secured by attaching screws to the top plate of the bearing partitions. They are also secured at four-foot intervals with combination clips. The convex side of the half stud nailing groove should be toward the partition.

FURRING—Where partitions must enclose soil pipes or ducts, the outside dimensions of which are greater than $3\frac{5}{8}$ in., (the depth of STRAN-STEEL standard studs) a double partition is built using two rows of STRAN-STEEL narrow studs set in narrow plate at top and bottom; the distance apart of the inside faces of the double partition is determined by the overall dimensions of the stack or duct to be enclosed.

WINDOW SASH—The drawings shown above illustrate two common types of sash and one method of framing each. It is to be noted that when double hung sash are used, exterior walls should be framed with STRAN-STEEL $3\frac{5}{8}$ in. studs. STRAN-STEEL $2\frac{5}{8}$ in. studs allow adequate wall thickness for framing in casement sash, and may be used with economy for full two-story construction.

STRAN- [5] -STEEL

ROOF FRAMING



● Inserting hinge pin in rafter rings; the hinge takes care of any pitch roof and pin is located in place with cotter key.

● Tightening bolts at rafter peak after rafters have been raised and temporarily braced in position.

● STRAN-STEEL rafters, raised in pairs and temporarily braced with boards laid diagonally across upper flanges and held with nails driven directly into the nailing grooves of the rafters. Temporary bracing is removed as permanent covering is applied.

STRAN-STEEL FOR RIGID, PERMANENT,

ROOF A VITAL FACTOR—One of the most important factors in the permanency, rigidity and fire-safety of an entire structure is its roof. From medieval times to the present day, inflammable roof construction has been the direct cause of many of the greatest conflagrations in history; insecure roof structure accounts for most of the damage to buildings caused by high winds; rotting, warping, sagging roof framing is responsible for a large portion of the expense of maintaining and repairing a home.

Because the shortcomings of roof construction were for the most part inherent in the materials of which they were built, the deficiencies of this portion of all structures were recognized long before any way to overcome them was devised. The solution to the problem came with the perfection of methods for utilizing permanent, fire-safe building materials. Among the latest and most widely accepted of these is STRAN-STEEL.

The use of STRAN-STEEL fulfills more completely *all* of the requirements and conforms more closely to traditional methods of roof construction than any other framing material.

STRAN-STEEL RAFTERS—Roof loads, pitch and span determine which STRAN-STEEL members shall be used as rafters. Their use conforms so closely to standard practice that the selection of the proper member may safely be left to anyone familiar with roof design and construction. The table of properties of STRAN-STEEL members (shown on page 12) and a table of roof bents, available on request, will be of assistance to architects

and designers in selecting the proper STRAN-STEEL members best suited to unusual requirements. Under ordinary conditions STRAN-STEEL 3 $\frac{5}{8}$ -in. stud sections are used where 2 x 4's and 2 x 6's have been used. On steep pitched roofs with long spans supports are used or STRAN-STEEL 8-in. joist sections used as rafters. STRAN-STEEL is particularly suited to flat roof construction on account of its nailing feature.

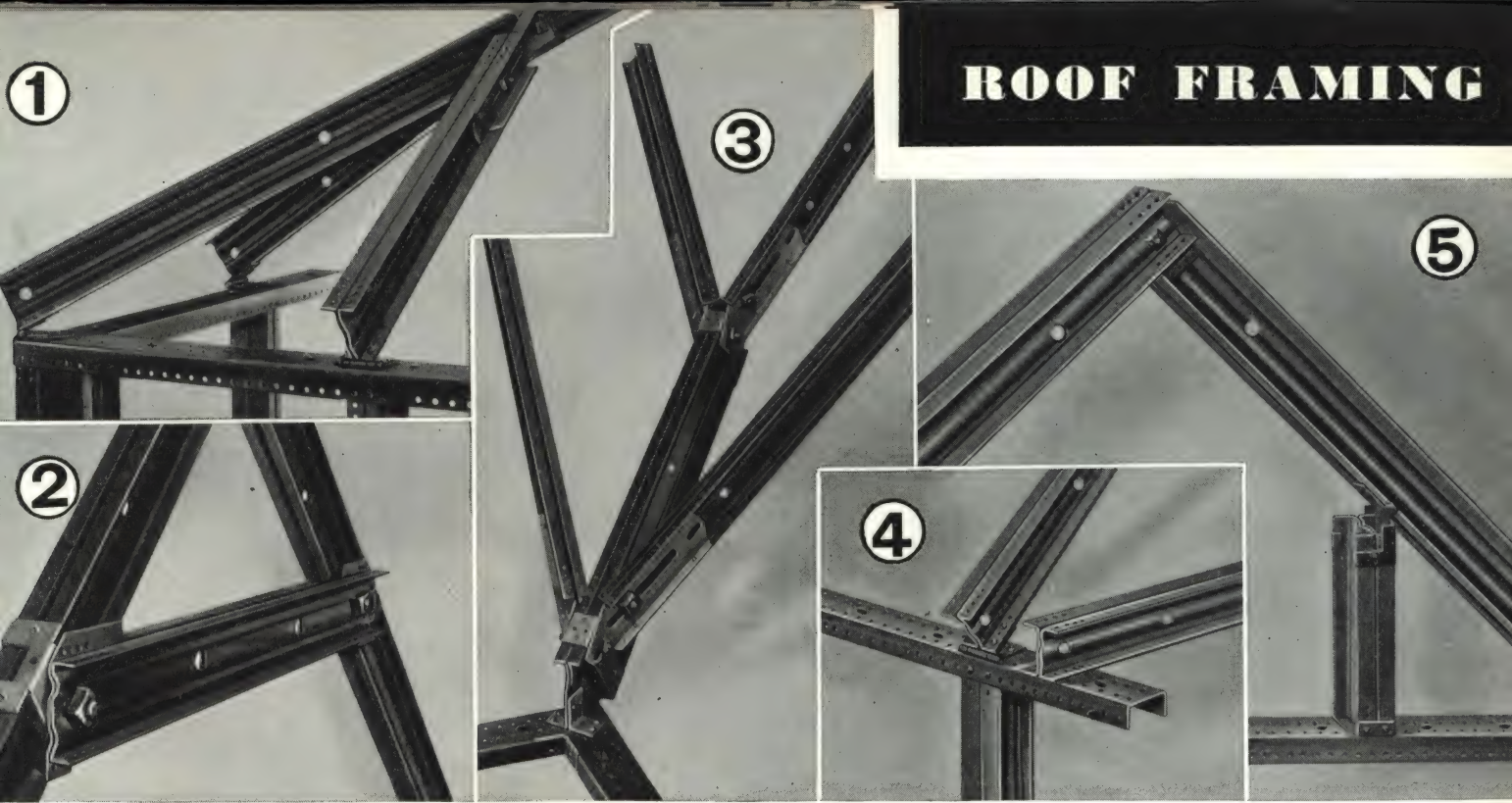
RIDGE CONNECTIONS—Rafters are connected at top by $\frac{3}{4}$ x $1\frac{1}{2}$ -in. bolts after adjacent flanges have been cut and bent down (see illustration No. 5, page 7). On hip roofs the hips are attached to the rafters at the top by rafter plates, cut, bent and punched to fit pitch of roof (see illustration above). Before this attachment is connected, a rafter sleeve (with two $\frac{1}{2}$ -in. bolts in place) for each pair of jack rafters is run on to hip to its approximate location. The same procedure is followed in attaching valleys.

RAFTER HINGE—All rafters are connected at the bottoms by special, heavy, loose-pin hinges (see illustration above) to accommodate any pitch. Each side of hinge is attached separately with four or more screws and assembled and held in position by inserting hinge pin. Hinge pin is cotter-keyed in place.

JACK STUDS—Ends of jack rafters are connected to sleeves on hip or valley rafters by rafter plates cut and bent two ways to fit angle of hips or valleys. Ends of jacks which connect to hips or valleys should be adjusted to plane of roof by means of

STRAN- [6] -STEEL

ROOF FRAMING



● All STRAN-STEEL attachments have been carefully designed for strength and simplicity; provision is made for adjustments where necessary.

ROOF FRAMING— LIGHTNING-PROOF

$\frac{1}{2}$ -in. bolt through curved slot in rafter plate. A $\frac{3}{4}$ -in. bolt with washer runs through rafter plate and hole in jack rafter. On long jack rafters, attaching screws are used to connect flanges of jack rafters to rafter plates.

DORMER JACK RAFTERS—Small dormers are set on main rafters. Dormer jack rafters are bolted together at top. Partition supports are placed across main rafters at intersection of dormer jack rafters and main roof. The jack rafters are separated by rafter plates cut and bent to correct angle to fit pitch of main roof. Main roof is sheathed first and dormer sheathing is nailed into main roof sheathing at line of intersection.

GABLE STUDS—Gable studs are attached over wall studs by 2-in. sections of plate. Connection to rafter is made by adjustable rafter clip. (See illustration No. 5, above.)

RAFTER BUCKS—The first pair of rafters at gable ends should be set with flat side of web out. They should also be punched every 16 in. along entire length of outer flanges for nailing in wood bucks. To these bucks the end of sheathing is nailed. If STRAN-STEEL $2\frac{1}{8}$ -in. studs are used as gable studs, rafter hinges attaching first pair of rafters should be set so that center line of first pair of rafters is $1\frac{1}{8}$ in. from outside face of gable. This setting lines up outside faces of studs on gable end and allows correct attachment of rafter clip. If $3\frac{5}{8}$ -in.

1 Hip roof framed with STRAN-STEEL. Rafter hinges may be attached to rafters and plate before rafters are elevated into position.

2 Collar tie in place. This picture clearly indicates the simplicity of STRAN-STEEL roof connections as well as the rigidity of the entire roof framing.

3 Valley construction; $3\frac{5}{8}$ -in. STRAN-STEEL rafter rigidly connected to 8-in. STRAN-STEEL joist used as valley rafter. The simplicity of STRAN-STEEL

attachments and the full adjustment which they permit are strikingly evident here.

4 Roof rafter and ceiling joist relationship is shown in this picture. Note alignment of center lines of stud and rafter; ceiling joist is set to one side to facilitate attachment.

5 Details of peak connection and attachment of gable stud to plate and rafter. Note how adjacent lower flanges on rafters are cut and bent at peak. Also note how rafter clip is nailed to rafter.

STRAN-STEEL studs are used as gable studs, rafter hinges should be set so that center line of first pair of rafters is $1\frac{1}{8}$ in. from outside face of gable. Where $2\frac{1}{8}$ -in. gable studs are used, rafter bucks are 1 in. thick; where $3\frac{5}{8}$ -in. gable studs are used, rafter bucks are $1\frac{1}{2}$ in. thick.

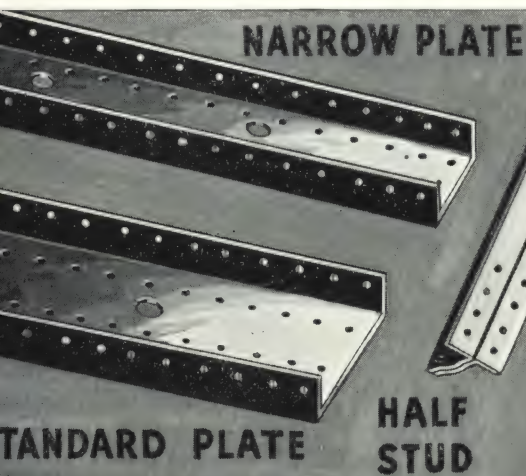
LOOKOUTS—Lower flanges of rafters on flat side are cut six inches from end and bent down. Horizontal wood lookouts are cut to fit cornice detail and nailed to rafter end through holes in rafter flanges.

LIGHTNING-PROOF QUALITIES—Although lightning is not ordinarily considered a major hazard, the fact remains that many fires and fatalities result each year as a result of destructive electrical storms.

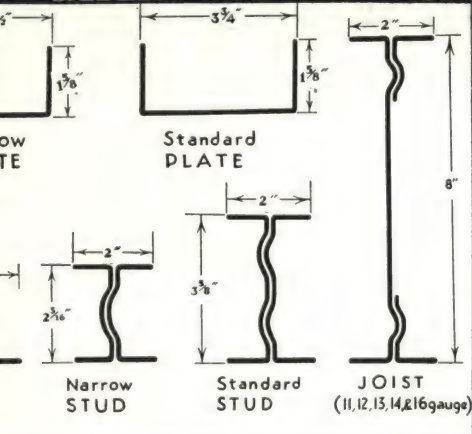
A steel framed building is one of the relatively few places where one is entirely safe from lightning. The destructiveness of lightning is in almost direct ratio to the pooriness of the electrical conductivity of the object which it strikes. Wood, stone, brick, concrete, all are about equally poor conductors of electricity, and all suffer accordingly when struck. In a steel frame building, however, the bolt is immediately grounded through the framework itself. Such a structure, according to the late Dr. Charles P. Steinmetz, famous electrical engineer, is the safest place to be during an electrical storm; even if struck, the steel frame grounds the destructive impact of the lightning, thus safeguarding both the structure and its occupants.

STRAN [7] STEEL

MAIN MEMBERS



MEMBERS MAIN MEMBERS



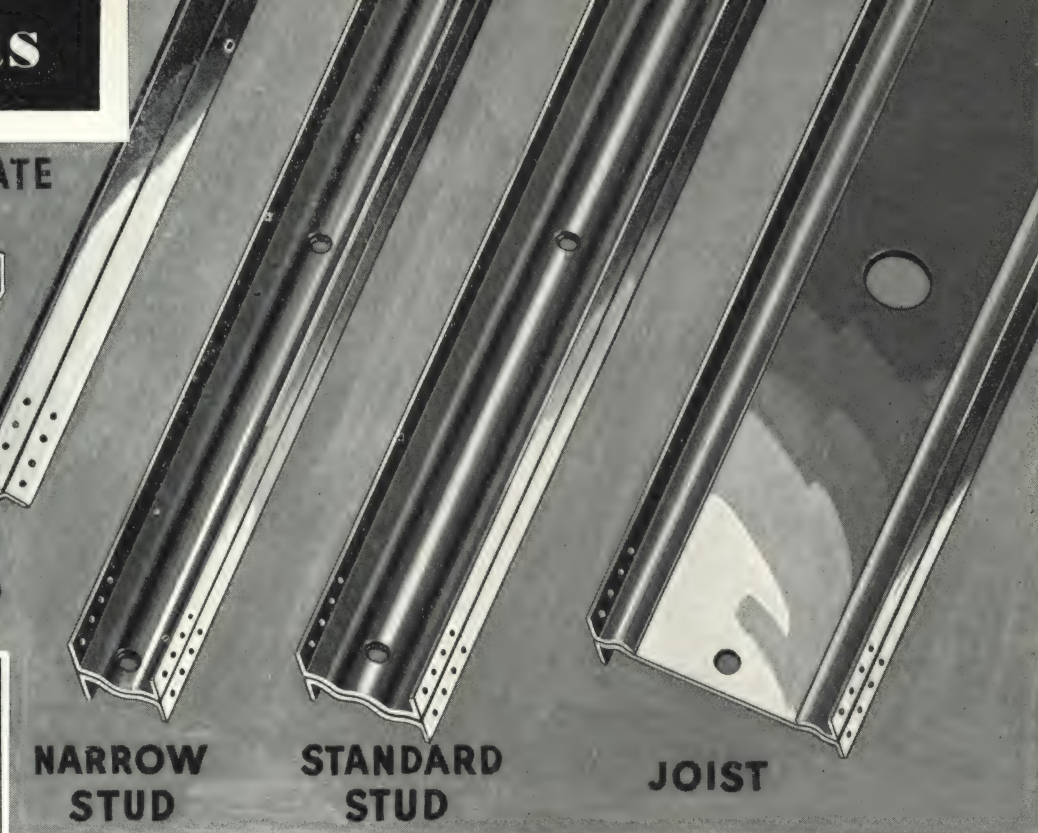
● Width over flanges and depth of STRAN-STEEL members is shown above. All are made from 16-gauge steel (.0625 in.); joists are also furnished in four other gauges as mentioned below.

JOIST, 8 IN., FURNISHED IN FIVE GAUGES—16, 14, 13, 12, 11. This member is used chiefly in floor construction. It is designed to replace wood 2 x 8's and 2 x 10's; spaced 2 ft. on centers it supports clear spans up to 18 feet with total load of 75 lbs. per square foot (see table, page 13).

STANDARD STUD, 3 3/8 In., 16 GAUGE—This member is used for framing outside walls up to three full stories as well as for inside bearing and non-bearing partitions which enclose heat ducts. Set 2 ft. on centers, the standard stud replaces 2 x 4's and 2 x 6's as ordinarily spaced.

NARROW STUD, 2 5/16 In., 16 GAUGE—This member is used for framing outside walls up to two full stories as well as for inside bearing and non-bearing partitions which enclose water, gas or steam pipes and wiring. The narrow stud is also used for short-span rafters and non-bearing ceiling joists. Set 2 ft. on centers, it replaces 2 x 4's as ordinarily spaced.

HALF STUD, 1 11/16 In., 16 GAUGE—Used as non-bearing nailing strip in partitions built out to enclose soil pipes, clothes chutes, extra deep duct work, etc. Also used as lath backing in corners between studs and at ceiling corners between joists.



STRAN-STEEL MEMBERS

SIMPLICITY and adaptability characterize STRAN-STEEL. There are only six main members. One of these, the joist member, is supplied in five gauges to accommodate varying floor spans and loads. All joist sections are 8 in. deep. This affects material savings at each floor level and permits lower over-all dimensions without sacrificing ceiling heights. Studs and plate are furnished in two widths. Rafters are formed from either stud or joist sections.

STANDARD PLATE, 3 3/4 In., 16 GAUGE—This member is used with 3 5/8-in. stud as sill and cap plate in outside walls and partitions; also used as stringer, sill header, ribband, girt and brace. It is punched at 1-in. intervals in the flanges for aligning and attaching 3 5/8-in. studs, and in the web for attaching to joist tops. In the foregoing locations it replaces 1 x 4's, 1 x 5's and 1 x 6's.

NARROW PLATE, 2 1/2 In., 16 GAUGE—Used with 2 5/16-in. narrow stud in the same way standard plate is used with standard studs; also used with half-stud furring.

STANDARD PUNCHING—All STRAN-STEEL main members are shop punched in the flanges, and with the exception of the half-stud, in the web to permit inter-connection. 1 3/8-in. holes are also punched in the webs of the standard studs and narrow studs to permit running conduit. The web of all joists are punched at intervals with 2 1/4-in. holes to permit running of conduits or steam, water or gas pipes at right angles to the long axis of the joist.

FINISH—All STRAN-STEEL main members and attachments are finished with a shop coat of special, rust-resisting, red enamel. This finish is tough and very adhesive. It will not chip, and resists scratching in handling and erecting.

STANDARD LENGTHS—See table, page 12.

STRAN · [8] · STEEL

ATTACHMENTS



HAND TOOLS FOR ERECTING



STRAN-STEEL ATTACHMENTS

INE of the features which has had much to do with the rapid acceptance of STRAN-STEEL has been the simplicity of the attachments. The illustrations at the top of this page and the descriptions below show the striking degree to which all attachments have been simplified. They are designed to inter-connect all STRAN-STEEL members with metal attaching screws, or bolts; several are also punched for nailing to main members for additional security.

A—COLLAR TIE BRACKET—For attaching 3 $\frac{5}{8}$ -in. members (used as collar ties) to rafters.

B—JOIST HANGER—For 8-in. joists, all gauges. Attaches rapidly and securely with screws and nails.

C—HEADER BRACKET, 2 SIZES—For connecting 8-in. joist headers over openings (1) to adjacent 3 $\frac{5}{8}$ -in. standard studs and (2) to adjacent narrow studs.

D—C-CLIP—Driven into nailing grooves of adjacent parallel members as a tie. Usually spaced 18 in. to 3 ft. apart.

E—HIP AND VALLEY COLLAR, 3 SIZES—For connecting 8, 3 $\frac{5}{8}$ and 2 $\frac{1}{8}$ -in. members where used as hips, valleys, and rafters.

F—PARTITION SUPPORT—Used under each stud of non-bearing partitions which run parallel to and between joists.

G—BRIDGING—Used in pairs between joists. Ends are coped out to engage joist flanges.

H—RAFTER PLATE, 2 SIZES—For top connection of hip rafters and bottom connection of valley rafters.

I—CORNER BRACKET—Used at top and bottom of stud and plate corner; also bent to reinforce all corners other than 90° such as bays, etc.

J—RAFTER HINGE—Loose butt hinge with cotter key through hinge pin; connects lower ends of rafters to plate.

K—ANGLE BRACKET—Connects rafter support from ceiling joist to underside of rafter; bent to fit pitch of rafter.

L—COMBINATION CLIP—Connects stair carriage to adjacent studs; also used for tying half-stud lath backing to adjacent studs.

M—RAFTER CLIP—Connects gable studs to rafters and jamb studs to headers.

MUSHROOM-HEAD NAILS—2 $\frac{1}{2}$ -in. coated nails with 1-in. inverted cup heads, used for attaching gypsum board plaster base, insulating sheathing, etc.; large head secures adjacent edges of board joints. Supplied in 10-lb. cartons as an extra item, if specified; 10 lbs. required for 1000 sq. ft. of side wall; 15 lbs. required for 1000 sq. ft. of ceiling.

STRAN [9] STEEL

STRAN-STEEL SPECIFICATIONS AND RECOMMENDATIONS SUGGESTED AS A GUIDE TO SPECIFICATION WRITERS

WORK INCLUDED—Shall be the furnishing and erection of the entire building frame composed of steel members manufactured by the STRAN-STEEL CORPORATION, 6100 McGraw Ave., Detroit, Michigan, as described in their manual.

STRUCTURAL STEEL—Where required shall be supplied, fully fabricated by general contractor as a separate item, not included in the STRAN-STEEL bill of material.

ERECTION OF FRAME—Shall be done by skilled mechanics in a substantial, workmanlike manner, true to line, level and plumb, in accordance with the manufacturer's specifications and recommendations.

SHOP PUNCHING—All framing members shall be delivered punched in accordance with the manufacturer's standard practice.

FIELD PUNCHING—All holes in addition to the standard shop punching necessary for the proper erection of the framing shall be hand-punched or drilled in the field by the erection contractor.

SHOP PAINTING—All framing members shall be given a coat of special rust-resisting paint at the shop.

FIELD PAINTING—The erection contractor shall touch up in one-coat work all spots where shop coat has been damaged.

TEMPORARY BRACING, FLOORING, ETC.—The erection contractor shall furnish and erect all necessary temporary bracing to brace and hold the framing true to line, level and plumb until the permanent bracing and complete fabrication is completed. He also shall furnish all necessary temporary floor or walkway planking required for the convenience and protection of all workmen.

JOISTS—Joists throughout shall be of sizes and spacing specified by the manufacturer. Spacing in general shall be 24 in. on centers. Joists shall have a wall bearing of not less than 4 in.

TRIMMERS AND HEADERS—Double all joists or provide heavier gauge single joists of proper carrying capacity under partitions and around all floor openings for stairs, chimneys, etc. Double joists shall be fastened together with "C" clips.

JOIST HANGERS—Provide joist hangers for the support of headers at trimmers and for the support of all tail joists at headers and similar positions unless these members are coped between the flanges of the supporting beams.

CROSS BRIDGING—Provide special channel type bridging spaced 6 ft. apart on centers for all joist spans exceeding 8 ft. Bridging shall be secured by bending ends over joist flanges.

PARTITION SUPPORTS—Where partitions running parallel to the joists are not directly supported by a joist, provide half stud partition supports with coped and crimped ends spanning between two joists centered under and supporting each stud of the partition (24 in. apart on centers). Bend ends of partition supports over and nail to the top flange of the joist.

CHANNEL PLATES—Channel plates to fit studs shall be provided as sills and plates for all exterior wall studding, all interior partitions, and elsewhere where required. Channels shall be lapped and fastened with two (2) screws at all corners.

ANCHOR BOLTS—Sills for exterior wall studding on masonry walls shall be secured to masonry with ½-in. diameter hook bolts spaced 4 ft. apart on centers; anchor bolts to be furnished and built in by the masonry contractor.

STUDDING—Studs spaced, generally, 24 in. apart on centers shall be provided for all exterior walls and interior partitions secured to sills and plates with four (4) screws each, two at top and two at bottom through diagonally opposite stud flanges. Provide jack studs between main wall sills and plates and window sills; between window and door lintels or headers and main wall plates above; for all gable walls; and wherever else required to provide nailing for enclosing exterior and interior wall material or finish. Where sills and plates with flanges are not provided to which to secure jack studs, provide stud clips. At gable end rafters provide rafter clips—nail clips to both studs and rafters and bend wings around stud flanges. Double studs at the jambs of all openings where the loads cannot be safely carried by a single stud. Secure double studs together with "C" Clips spaced approximately 3 ft. apart on centers.

JAMB STUDS—Provide studs to serve as jamb studs at all openings where main wall or partition stud spacing does not fulfill requirements.

OPENING SILLS AND HEADERS—Sills and headers shall be provided as required for all exterior and interior wall and partition openings, and headers shall be secured by header brackets.

PARTITION FURRING—To increase the thickness of partitions to accommodate pipes, ducts, etc., furr the main partition with half studs secured to narrow plates. Brace furring to main studding at center.

STAIR CARRIAGES—When specified, provide stair carriages for all stairs in pairs or threes as the width and character of the stair runs require. Frame also for all stair landings or platforms. Carriages shall be formed of stud or joist members substantially framed and secured to stairwell headers with rafter sleeves bolted to both carriages and headers and secured to studs with combination clips.

RAFTERS—Rafters shall be spaced 24 in. apart on centers. For pitched roofs, rafters shall consist of stud or joist members depending on the span and loads supported. For flat roofs, rafters shall consist of joist members. The heel of each rafter shall be secured at the wall to the wall plate with an adjustable rafter hinge screwed to both rafter and plate. Rafters shall be secured to the ridge by cutting away adjacent lower flanges and bolting together through webs of rafters. Jack rafters shall be secured at heels as specified for main rafters and at hip and valley rafters with rafter sleeve and rafter plates. Rafters meeting at ridge line shall lap each other and be bolted together through the webs.

HIP AND VALLEY RAFTERS—Shall consist of stud or joist members as best adapted to spans and loads supported.

COLLAR TIES—Shall be provided to brace and tie rafters together where required. They shall consist of stud members having the flanges abutting rafters cut and bent to the plane of the webs. Secure collar ties to rafters with collar tie brackets—bend wings of brackets around rafter flanges and bolt ties to brackets.

DORMERS—Where and if specified, dormers shall be constructed of STRAN-STEEL framing. Frame in the same manner as specified for similar parts of the main structure.

RECOMMENDATIONS

FLOORS (Concrete)—All subfloors shall be of 2 in. thick 2000 lb. 1-3-4 mix concrete, reinforced. Reinforcement shall be ¼ in. diameter plain rods placed not more than 6 in. on centers, or ¾-in., 4-lb. rib lath, or wire mesh. Reinforcement, lath, or mesh should be stapled directly to tops of STRAN-STEEL joists. Top surface of concrete slab shall be prepared to receive finish flooring.

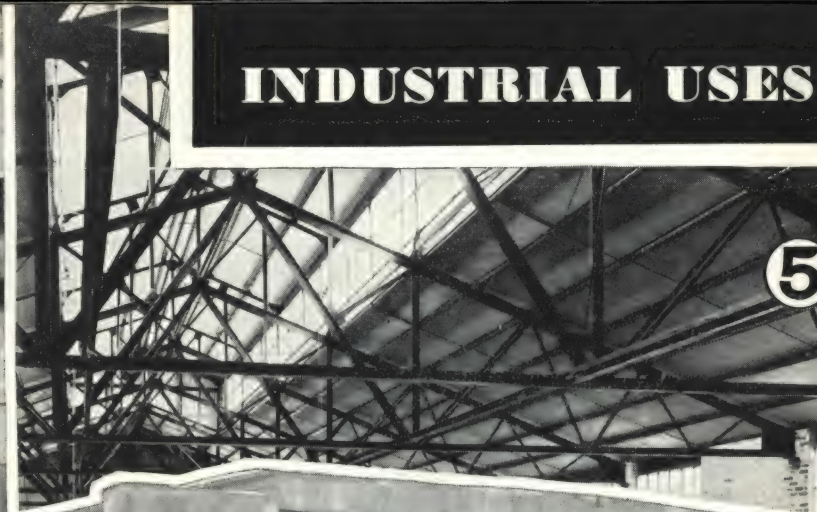
(Wood)—In some instances, it is possible, under existing Building Codes, to use a wood floor, and same may be applied as follows: Lay 2 x 4-in. sleepers 16 in. on center, flat, at right angles to run of joists; nail sleepers to joists and nail wood subfloor to sleepers in ordinary manner.

WALLS—As a plaster base secure to each stud ¾ in. thick approved gypsum board or a 2.5 lb. diamond mesh sheet lath. Gypsum board shall be secured with No. 12 wire 2½ in. long, 1-in. diameter disc headed, coated nails spaced not over 6 in. on centers. If board be 16 in. wide use four nails at each stud bearing.

CEILINGS—As a plaster base secure to each joist ½ in. thick approved gypsum board or a ¾-in. 3.4-lb. rib lath. Gypsum board shall be secured in manner and with same nails as specified under "Walls."

EXTERIOR WALL INSULATING SHEATHING—Not less than ½ in. thick approved insulating board shall be nailed to each stud on exterior face of exterior wall with same nails as specified under "Walls." A superior job will be obtained if such insulating board is covered on exterior surface with an approved damp-resisting sheathing paper, well lapped and nailed.

INDUSTRIAL USES



● 1—Automobile service stations economically framed with STRAN-STEEL. 2—STRAN-STEEL in combination with standard structural steel members. 3—Light, fire-safe STRAN-STEEL made possible a complete thirteenth floor on this twelve-story building. 4—STRAN-STEEL is used for supporting new fronts on old buildings. 5—STRAN-STEEL used as purlins with structural steel roof trusses. 6—A fire-safe, inexpensive airplane hangar framed with STRAN-STEEL. 7—Penthouse construction and additions to existing buildings use STRAN-STEEL to great advantage. 8—STRAN-STEEL used to attach exterior covering to structural steel frame.

STRAN-STEEL HAS MANY INDUSTRIAL USES

ADDITIONS, PENTHOUSE CONSTRUCTION—Building code restrictions and inability to add the necessary structural support for heavy materials frequently make STRAN-STEEL the only material with which certain types of additions to existing buildings may be made.

FIRE-SAFE SEMI-PERMANENT CONSTRUCTION—Fire hazards definitely eliminate inflammable framing materials from a large number of semi-permanent structures. STRAN-STEEL is ideally suited to these. It is less costly than fire-proof, permanent construction; it allows any kind of interior or exterior treatment, it is 100% salvable if the structure is ever dismantled or moved.

USES WITH STRUCTURAL STEEL—In conjunction with standard structural steel STRAN-STEEL is frequently used as girts and purlins. Its nailing feature is responsible for its increasing use as furring or backing for interior or exterior covering materials over structural steel framework.

PARTITIONS: SUSPENDED CEILINGS—The use of STRAN-STEEL for partitions is steadily increasing. It retains its alignment and requires no bracing during construction. It is sufficiently rigid to permit simultaneous plastering of both sides and obviates plaster damage around heavy doors after completion. STRAN-STEEL is also an ideal making material for suspended ceilings.

STRAN-STEEL

FIRE-SAFE FRAMING

**LIGHT GAUGE, NAILABLE
STEEL JOISTS, STUDS AND
RAFTERS FOR LIGHT
LOAD BEARING
STRUCTURES**



Manufactured by
**STRAN-STEEL
CORPORATION**

DETROIT

MICHIGAN

KELLEY PLASTERBOARD CO., INC.

Manufacturers of Kelley Columns

DELAWANNA, NEW JERSEY

Nine Miles from New York City

Representatives and Dealers in Principal Cities of the Eastern States

For Kelley Gypsum Products and Texturing Materials, see File Index

KELLEY (CONCRETE FILLED) COLUMNS



Kelley Columns

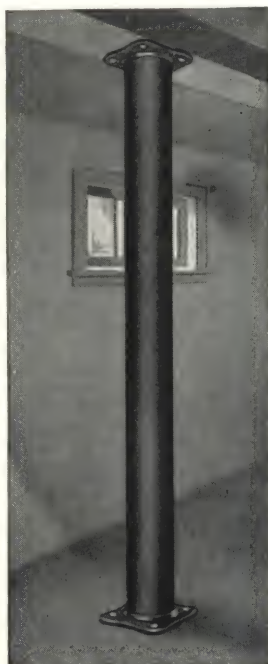
Kelley Columns are manufactured in the Delawanna plant of the Kelley Plasterboard Co., Inc. They are made under exacting specifications and thorough supervision. The steel shell is made of mild steel pipe in sizes of 3½ to 6 in. in outside diameter. They are made in standard and heavy weight thickness of steel shell and in any length ordered.

Concrete Filling

The steel shells are filled with machine mixed stone concrete and, to assure a dense concrete, the shell is agitated by vibration before the concrete sets. By this method, air holes and cavities in the concrete are eliminated and a concrete of great compressive strength is produced. The concrete is allowed to season thoroughly before being stocked.

For Use in Medium Sized Construction

These columns are designed principally for use in basements and under other conditions where a small, strong support is required.



Kelley Labels on the End of Each Column for Identification



Caps and Bases of Cast Iron

Cast iron caps and bases of ample strength for all loads are provided. These plates are gray iron castings and do not rust as quickly as steel caps under damp conditions.

Tests

The ratings on these columns were determined by actual tests made at Columbia University Testing Laboratories. Complete report will be sent on request.

Approval of Building Departments

Kelley Columns are approved by the Building Departments of the principal cities in the East.

Identification of Kelley Columns

Each column is stamped before shipment with the size and "Kelley" trade mark. The stamp is placed on the end of each column before shipment so that they may be easily identified on receipt at the job, yet the marking does not show on the face of the column.

Painted Before Shipment

The columns are finished with red or aluminum metallic paint before being shipped.

WEIGHTS AND SAFE CARRYING CAPACITIES OF KELLEY COLUMNS IN TONS

(Capacities Figured with Safety Factor of 4)

Dimensions of Columns in inches	STANDARD WEIGHT				
	3½	4	5	5½	6
Weights in lbs. per ft.	12½	16	25	29	30
Length of Column	Tons	Tons	Tons	Tons	Tons
6 ft.	8.5	12.	17.	19.	21.
7 ft.	8.	11.5	16.	18.	20.
8 ft.	7.5	11.	15.5	17.5	19.5
9 ft.	7.	10.	15.	17.	19.
10 ft.	6.	9.	14.5	16.5	18.5
11 ft.	—	8.	14.	16.	18.
12 ft.	—	—	13.5	15.	17.
13 ft.	—	—	13.	14.	16.
14 ft.	—	—	12.5	13.	15.
15 ft.	—	—	—	12.	14.

MEMORANDA

**MISCELLANEOUS
STEEL AND IRON**
- S E C T I O N -

6

CATALOGS 1 to 35

THE CANTON FOUNDRY & MACHINE CO.

Manufacturers of Building Specialties

CANTON, OHIO

NEW YORK OFFICE: Room 401, 401 Broadway—Telephone, CAnal 6-2065

PRODUCTS

BUILDING SPECIALTIES, which include:
Sidewalk Doors; Coalhole Covers; Sidewalk Ventilators; Area Gratings; Illuminating Iron Sidewalk Plates; Sidewalk Gutter Boxes; Conductor Connections; Conductor Boots; Ash Pit Doors; Stack

Doors; Coal Chutes (Foundation); Coal Doors; Wheel Guards; Valve Covers; Drain Covers; Water Meter Covers; Lamphole Covers; Catchbasin Covers; Manhole Covers; Street Drain Boxes; Street Castings and Automobile Turntables.

WATERPROOF SIDEWALK DOORS

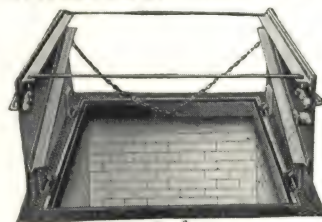
Construction

Our doors are constructed with a heavy cast iron frame cast in one piece, which will last indefinitely, because cast iron has a very great resistance to corrosion. Frame has a large water drain cast entirely around the inside and is provided with a drain through the center where the doors meet. The leaves are $\frac{1}{4}$ -in. checkered steel plate reinforced with angles and provided with heavy removable cast iron hinges having bronze hinge pins.

CLEAR OPENING SIZES

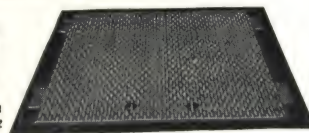
All dimensions in inches

A	B	A	B	A	B
Double Leaf					
30	42	48	36	60	60
30	48	48	48	66	36
36	36	54	48	66	48
36	48	57	57	72	36
40	48	60	36	72	48
44	44	60	48	72	60
Single Leaf					
20	18	24	24	30	30
24	18	30	24	36	30

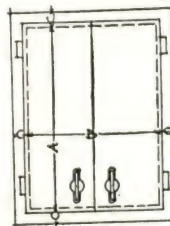


OPEN WITH STAY ROD AND CHAIN

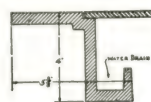
Furnished in sizes shown by the three tables on this page



CLOSED



PLAN.



Section Thru C.I. Frame

All our Sidewalk Doors are flush and comply with city laws.

Specifications

Double Leaf Doors—Furnish and install, flush type, double steel leaf Sidewalk Doors, of the clear opening size as shown on the plans, and as manufactured by THE CANTON FOUNDRY & MACHINE CO., Canton, Ohio.

Doors to be constructed with a heavy cast iron frame, cast in one piece, with a $1\frac{1}{4}$ x 1-in. water drain, cast around the inside of frame, this drain to be provided with two $\frac{3}{4}$ -in. pipe taps for attaching pipe drains to sewer or sump.

Checkered steel door leaves to be $\frac{1}{4}$ in. thick, reinforced with $3 \times 2\frac{1}{4}$ -in. angles, and provided with a $2 \times \frac{3}{8}$ -in. channel drain through center where doors meet.

Door leaves to be provided with heavy removable cast iron hinges with bronze hinge pins.

Doors to lock and unlock from inside only, by means of sliding bolt type lock, and provided with stay rod and chains to hold the same in open position.

Single Leaf Doors—Furnish and install, flush type, Single Steel Leaf Sidewalk Doors of the clear opening size as shown on the plans and as manufactured by THE CANTON FOUNDRY & MACHINE CO., Canton, Ohio.

Doors to be constructed with a heavy cast iron frame, cast in one piece, with a $1\frac{1}{4}$ x 1-in. water drain around the inside of frame, this drain to be provided with two $\frac{3}{4}$ -in. pipe taps for attaching pipe drains to sewer or sump.

Checkered steel door leaf to be $\frac{1}{4}$ in. thick, provided with heavy removable cast iron hinges with bronze hinge pins and sectors for holding door open, and locking same when closed.

UNIVERSAL CAST IRON LEADER BOOTS AND AUTOMOBILE TURNTABLES

The use of cast iron boots eliminates any possible chance of having an unsightly, rusted out down-spout. They cannot become broken or displaced, and when installed have a very neat appearance and are an added attraction to the finished building.

Construction and Finish—"Universal" Leader Boots and Connections are constructed of cast iron. The castings are sand-blasted and all fins are carefully removed. They are easily installed, being provided with lugs for attaching them to wall brackets. They are designed to correspond with plain round, round corrugated and square corrugated copper or galvanized iron conductor pipe.

SIZES

Style	Size, in.	Style	Size, in.
C, D, H, G	3	F, E	$2\frac{3}{4} \times 3\frac{1}{2}$
	4		$3\frac{1}{4} \times 4\frac{1}{2}$
	5		$4\frac{1}{4} \times 5\frac{1}{2}$
	6		$5\frac{1}{4} \times 6\frac{1}{2}$

Standard stock sizes are 4 ft. 6 in. over all. Can furnish any length desired, also special sizes. Styles H, D

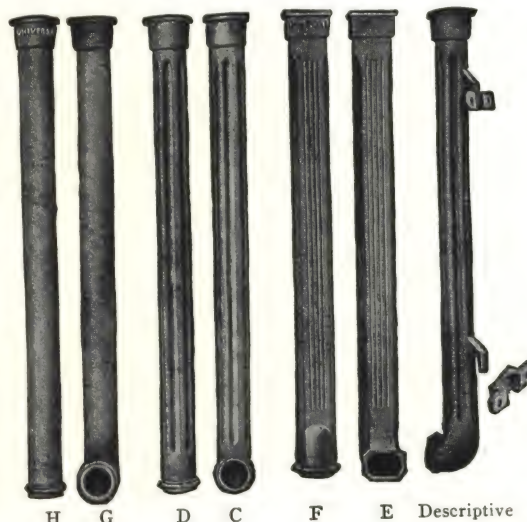
and F are used with underground soil pipe or tile drains. Styles G, C and E discharge water on sidewalk or driveway.

Specifications—Furnish and install for all downspout connections "Universal" Cast Iron Leader Boots or Connections manufactured by THE CANTON FOUNDRY & MACHINE CO., Canton, Ohio, of the style, size and length as shown on the plans. Same to be provided with lugs and $1\frac{1}{2}$ -in. wall brackets for attaching to building.

Automobile Turntables

Made in two styles; one without pit which may be placed anywhere on a solid base; the other placed over a pit which is furnished with or without a washrack extension which may be connected to the drain to take away water used in washing cars.

Made for passenger cars in diameters from 14 to 16 ft. and for trucks and busses up to 30 ft. Capacities range from 3 to 15 tons. Furnished for manual or electric operation. Complete directions for erecting are furnished with each order. Any careful mechanic can install them.



THE AMERICAN BRAKE SHOE AND FOUNDRY COMPANY

NEW YORK, N. Y.

CHICAGO, ILL.

Armored Concrete Corporation

(LICENSOR)

NEWARK, N. J.

OFFICES AND WORKS

NEW YORK, N. Y.
BALTIMORE, MD.
LOS ANGELES, CALIF.
HOUSTON, TEX.CHICAGO, ILL.
WASHINGTON, D. C.
BUFFALO, N. Y.CLEVELAND, OHIO
PORTSMOUTH, VA.
MINNEAPOLIS, MINN.
CINCINNATI, OHIOTOLEDO, OHIO
PITTSBURGH, PA.
BOSTON (NORWOOD), MASS.SAN FRANCISCO, CALIF.
KANSAS CITY, MO.
DENVER, COL.
CHATTANOOGA, TENN.

ARMORED CONCRETE—A REVOLUTIONARY CONSTRUCTION

Defeating the Destructive Factors: Impact, Abrasion, Corrosion

Products

Manufacturers and Installers of:

CURBS—Armored Concrete for Pavements, Driveways
DOORWAY GUARDS
WHEEL GUARDS
COLUMN GUARDS
WAINSCOTING and SURBASE
TRAFFIC MARKERS
TRENCH COVERS and GRATINGS
LOADING PLATFORM PROTECTION

What Is Armored Concrete?

Armored Concrete is concrete armored with gray cast iron. The armor of cast iron is bonded to the concrete in such a way that no part of it can vibrate in the slightest degree. Consequently, there can be no fracture of the cast iron. The composite structure of Armored Concrete is such that the force of impact is distributed over a large area, thus preventing damage to the concrete.

The resistance of cast iron to abrasion and corrosion is well known.

The coefficients of expansion of cast iron and concrete are such that Armored Concrete is not damaged by temperature variations.

Finally, when Armored Concrete is used all formwork is eliminated.

Inasmuch as the only positive test of a new type of construction is the double test of time and performance, applications of Armored Concrete were confined almost exclusively to the New York area for a period of ten years. Points were selected, such as the Holland Tunnel, where this revolutionary construction would be subjected to the most severe conditions of impact and abrasion. These points were closely watched over a period of years. Armored Concrete withstood every test without a single failure.

Now—A National Service

Now, for the first time, this construction is available from coast to coast. Through a license arrangement with the Armored Concrete Corporation of Newark, N. J., THE AMERICAN BRAKE SHOE & FOUNDRY COMPANY, with its fifteen strategically located plants, makes Armored Concrete available to architects and engineers in all sections of the country.

Engineering Service

Detailed engineering drawings will be submitted and estimates prepared without obligation. Consultation is invited. Write for catalog.

Characteristics

(1) **Impact Resistance**—Armored Concrete is the only known structure that resists impacts perfectly.

(2) **Abrasion Resistance**—All surfaces subject to abrasion are protected by the cast iron component. The performance of cast iron under abrasion is well known.

(3) **Corrosion Resistance**—The corrosion of cast iron as used in Armored Concrete is negligible.

(4) **Variation of Temperature**—The coefficients of expansion of cast iron and concrete are such that Armored Concrete is not damaged by temperature variations.

(5) **Fire Resistance**—The cast iron component prevents Armored Concrete from being damaged by fire.

(6) **Elimination of Forms**—When Armored Concrete is used all formwork is eliminated. This greatly simplifies construction and reduces costs.

(7) **Maintenance**—With Armored Concrete maintenance costs are nil.

(8) **Appearance**—Armored Concrete is exceptionally pleasing in appearance, the cast iron component being hardly detectable.



THE MAJESTIC COMPANY

Manufacturers of Coal Windows and Chutes, Package Receivers, Fireplace Dampers and Building Specialties

HUNTINGTON, IND.

DISTRIBUTED THROUGH 9000 HARDWARE, BUILDING SUPPLY AND LUMBER DEALERS

PRODUCTS

MAJESTIC MALLEABLE IRON BREAK-PROOF COAL WINDOWS, GRADE LINE and STORE COAL CHUTES, MILK and PACKAGE RECEIVERS, FIREPLACE DAMPERS.

Also Underground and Built-in Garbage Receivers, Built-in

Mail Boxes, Radiator Cabinets and Covers, Ash Dumps, Ash Pit Doors, Access Units, Basement Incinerators: Portable and Built-in Types; Air Conditioning Heating Systems, Roll-N-Fold Garage Doors.

MAJESTIC COAL WINDOWS

This popular, sturdy window has won widespread preference because of the protection it gives to the entire opening and side-wall when coal is being deposited in the bin. It protects the building *above* the window where protection is most needed—thus it saves its initial cost many times over and enhances property value by its permanence, sightliness and convenience.

Styles

Majestic coal windows are made in solid steel and in glass panel styles as follows:

No. M101 (Steel Door Style)—Equipped with sloping bottom body and chain to gravity catch.



Closed
Majestic Coal Window
Nos. M101 and M203



Closed
Majestic Coal Window
Nos. M10 and M20

No. M203 is the same as No. M101 but larger in size.

No. M500 (Steel Door Style)—Differs only from No. M101 in that it has a 9-in. straight bottom body, without hopper or chain. No. M520 is the same, but larger.

No. 50 (Steel Door Style)—Same dimensions and construction as No. M500 except for lighter gauge ungalvanized steel door, and cast semi-steel frame.

No. 60 is No. 50 with glass panel door.

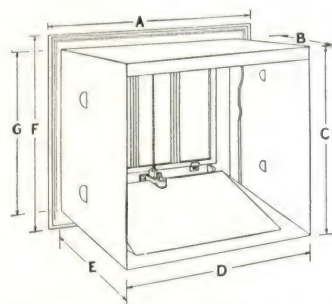
No. M10 (Glass Panel Style)—Used when daylight is desired in the coal bin or basement. Has three lights of ¼-in. plate glass set in a ½-in. angle iron frame with two pressed steel dividing strips to give still more strength. Rubber packing is used instead of putty. The door is heavy, electro-galvanized steel, the glass being protected by a steel shield when open. Otherwise No. M10 is the same as No. M101.

Style A has a hopper. Style C is without hopper.

No. M20 is same as No. M10, but is larger in size.

Construction

The doors of Majestic coal windows are made of heavy pressed steel, electro-galvanized to resist rust. Frames are made of malleable iron. They set true in the masonry—no installation difficulties. Hinges are made of malleable iron. Unfailing burglar-proof lock. Bodies and hoppers are made of Keystone copper steel and heavily reinforced at points of strain.



Dimension Diagram of All Styles of Majestic Coal Windows

STYLES AND SIZES OF MAJESTIC COAL WINDOWS

Steel door styles		Glass panel styles		Rough wall opening, in.			Dimensions in inches							
No.	Style	No.	Style	Wide	High	Deep	No.	A	B	C	D	E	F	G
M101	*B	M10	*A	23	17	12	M101	24 1/8	12	18 1/4	21 3/4	12 1/2	18 1/8	15 1/2
M203	§D	M20	§C	32	22	17	M203	33	17	24 3/4	29 1/2	17 1/2	23 1/2	20 1/2
	*B		*A				M500	24 1/8	9	15 1/2	21 3/4	9	18 1/8	15 1/2
M500	§D	M600	§C	23	17	9	M520	33	12	20 1/2	29 1/2	12	23 1/2	20 1/2
M520	**	M620	**	32	22	12	M 10	24 1/8	12	18 1/4	21 3/4	12 1/2	18 1/8	15 1/2
							M 20	33	17	24 3/4	29 1/2	17 1/2	23 1/2	20 1/2
							M600	24 1/8	9	15 1/2	21 3/4	9	18 1/8	15 1/2
							M620	33	12	20 1/2	29 1/2	12	23 1/2	20 1/2

*Furnished with hopper. §Furnished without hopper.

**Has straight bottom body—no hopper furnished.

THE NEW MAJESTIC MILK AND PACKAGE RECEIVER

In designing this new product, the accepted utility of the receiver has been enhanced by the addition of insulated doors and smart modern appearance.

The new Majestic Receiver is built in two models.

Model "S" is in three sizes and consists of two cast semi-steel doors and frames connected together with a telescoping steel body.

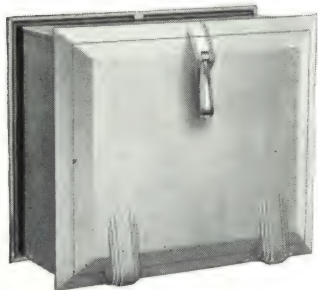
Model "W" consists of the doors and frames only, which may be secured to the inside and outside of a built-in compartment of wood of whatever size and shape the owner desires.

The new drop door makes installation possible in restricted space and also provides a convenient shelf to support bottles, etc., while the receiver is being emptied or filled.

The outside door is efficiently insulated against heat or cold. Burglarproof locks safely secure the door when closed and a simple gravity device locks the outside door automatically after deliveries have been made.

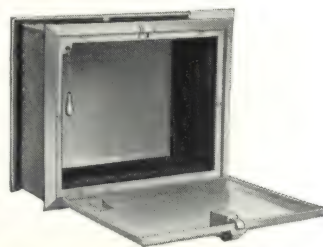
The standard finish is baked-on white enamel with chromium plated handles.

Outside dimensions of all models: frames 15 3/4 in. wide, 13 1/2 in. high; wall opening required, 14 1/2 x 11 in. Model "S" made in three body depths: S-10 adjustable to walls from 5 to 8 in. thick; S-20 from 8 to 14 in.; S-30 from 14 to 22 in. Special depth bodies on specification.



Inside View with Door Closed

Frames are flush on back side. Door closes on fastening screws when installation is made on wood compartment, preventing their removal by unauthorized persons



Inside View with Door Open

Illustrating how door forms shelf, also note pendant for unlocking outside door for next delivery

MAJESTIC COAL CHUTES

Grade Line Chute

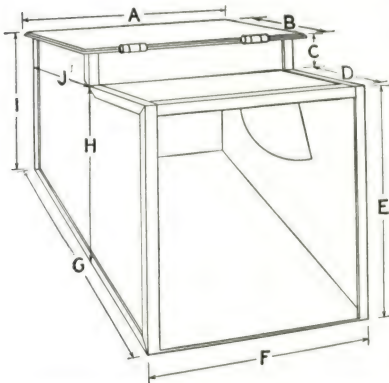
The Majestic grade line coal chute is designed for buildings having little or no foundation above ground.

Door swings upward and, when raised, forms part of the hopper and becomes a shield which protects the building when coal is delivered. When closed, the door locks automatically and is burglarproof.

Breakproof construction throughout. Frame, door and hinges are of certified malleable iron, with solid brass pins; body of keystone copper steel, reinforced with angle iron. The door fits snugly over the top of the frame when closed. This feature, with the waterproofing ridge around the inside edge of the frame, gives an absolutely watertight job.

No. M-14 is especially designed for small residences.

Prices on special bodies on request.



Dimension Diagram of Majestic Grade Line Coal Chutes

SIZES OF MAJESTIC GRADE LINE CHUTES				
No.	Door opening, in.	Rough wall opening (inches)		
M16	23½x18¼	25	x	25
M18	29x24	31	x	31
M14	21¾x15½	23	x	23

DIMENSIONS IN INCHES

No.	A	B	C	D	E	F	G	H	I	J
M16	26	21	6	15½	24½	24¼	36½	19	18¾	19¼
M18	31¾	27	6	17	31	31	45	24	21½	25¼
M14	24	18	6	15½	22½	22¼	34¼	16	15¾	16

SIZES OF MAJESTIC STORE CHUTES

No.	Door opening, in.	Rough wall opening (inches)	
		Above grade	Below grade
M12	21x15	23x16¾	23x25
M15	29x19¼	31x21½	31x24½

DIMENSIONS IN INCHES

No.	A	B	C	D	E	F	G	H	I	J
M12	25	11½	26¾	15¼	23	19¼	13	15½	17	18
M15	33½	11½	30	16	30¾	19¼	13	15½	21¼	22½

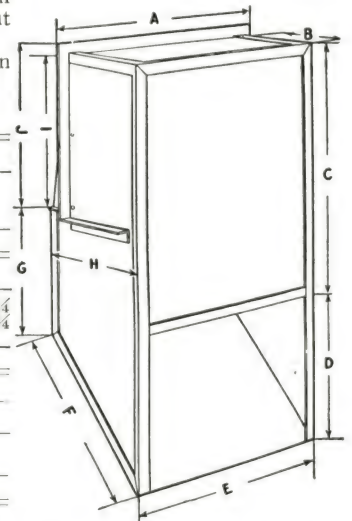
Store Chute

The Majestic store coal chute is designed particularly for store and office buildings, where the first floor is on a line with the sidewalk or alley. It does away with the dangerous sidewalk coalhole and the necessity of putting up a bond for the protection of pedestrians.

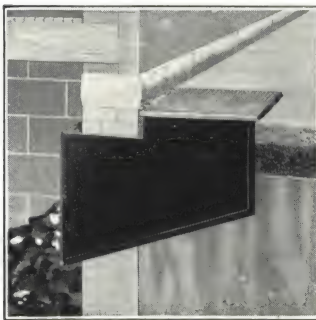
Frame and hinges are certified malleable iron; doors of heavy gauge pressed steel, electro-galvanized to resist rust.

Two sizes, with or without hoppers. Style "B" with hopper. Style "D" without hopper.

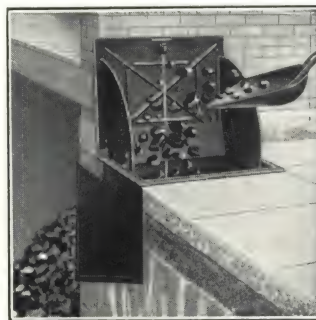
Prices on special bodies on request.



Dimension Diagram of Majestic Store Coal Chutes

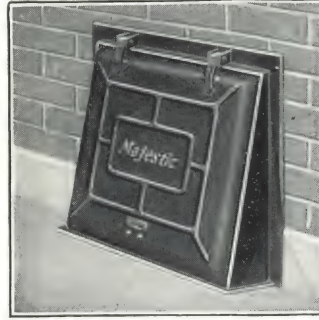


Closed

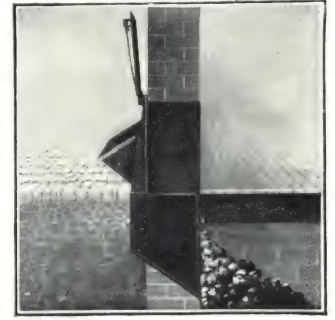


Open

Majestic Grade Line Coal Chute



Closed



Open

Majestic Store Coal Chute

MAJESTIC FIREPLACE DAMPERS

The Majestic damper is scientifically designed, simple in construction, easy to operate and gives perfect draft control.

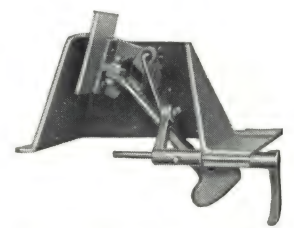
The lintel integral with the frame of the damper establishes the correct distance from the top of opening of fireplace to the top of throat, the most important dimension of the whole fireplace. It also makes it necessary to place the damper forward in the fireplace, thus leaving room for a smoke shelf behind.

Ease of operation is accomplished by the *trouble-proof friction principle for opening and closing the valve*. The operating lever is out of sight and easily moved forward or backward with a poker, and it stays in position until again adjusted. The throat opening is subject to the most minute adjustment.

The Majestic Type X is supplied for those who prefer the face control.

The valve is hinged at the back, which permits heat to be thrown out into the room, draws the smoke off from the nearest possible distance from the face of the fireplace, and aids the smoke shelf in turning the down-draft back up the chimney.

With the Majestic throat and damper any mason can build a perfect fireplace by following the drawings and instructions furnished with each damper.



End View Showing Type "X" Control



Majestic Fireplace Damper as Installed in Fireplace

SIZES AND DIMENSIONS OF MAJESTIC FIREPLACE DAMPERS

Damper No.	24-26	28-30	32-34	36-38	40-42	44-46	48-50	52-54	58-60
Length of lintel, in.	28¾	32¾	36¾	40¾	44¾	48¾	52¾	56¾	62¾
Length at back, in.	25¾	29¾	33¾	37¾	41¾	45¾	49¾	53¾	59¾
Length of valve, in.	20	24	28	32	36	40	44	48	54
Finished opening:									
Width, in.	26	28	30	32	34	36	38	40	42
Height, in.	28	29	30	30	31	31	31	32	32
Firebox depth, in.	16	16	17	17	18	18	19	19	20
Flue size, in.	8x8		8x12		12x12		12x16	12x18	12x18

CENTRAL WIRE AND IRON WORKS

Patented "Ever-Ready" Steel Stairs

309 Gratiot Street, ST. LOUIS, MO.

Products

"EVER-READY" STEEL STAIRS.

Also Fire Escapes and Ornamental Iron Work.

Outstanding Features of Our Improved "Ever-Ready" Steel Stairs

- (1) Used as an immediate service stair during construction of building.
- (2) Attractive, practical and less costly than the old method of construction.
- (3) The separate nosing is of much heavier gauge material than generally used for treads and risers.
- (4) Easily broom-cleaned before tread filler is applied.
- (5) Speed of erection is accelerated.
- (6) Minimizes accidents.
- (7) Nosing is slid into place in much the same manner that

safety treads are now set when applying the filler, and with no greater effort or expense.

(8) Nosings are not damaged as is often the case with nosings fixed on stairs at the factory.

(9) Requires no temporary tread filler of planks or other substances.

(10) Furnished in large sections ready to set in place.

(11) Steel newels, with cast caps and pendants, may be paneled and are more modern than the newels ordinarily used in general stair construction.

(12) Newels in our construction serve only as railing stops.

(13) Stairs are supported on floors and platforms—not dependent on support by newels.

Specifications

Stairs—Shall be of the "Ever-Ready" type of construction as manufactured by the CENTRAL WIRE AND IRON WORKS, St. Louis, Mo., and as illustrated in SWEET'S CATALOG

FILE—ARCHITECTURAL, and designed to carry a live load of 125 lbs. per sq. ft., arranged for concrete fill $1\frac{1}{4}$ in. thick furnished by others.

Stringers—Shall be not less than $\frac{3}{8}$ -in. steel plate bent in channel form 10 in. or more in width. Exposed or face strings to have wrought iron mouldings at top and bottom flanges riveted to strings. All exposed rivets on face strings to be countersunk.

Treads and Risers—Of interlocking construction, not less than No. 13 blue annealed steel with separate interlocking nosing of No. 10 gauge with punched lugs 1 in. long, spaced 10 to 12 in. on centers, to engage in corresponding slots punched in treads.

Nosings—To be attached (slid into place) at time of inserting the fill by Contractor for that material. (See details.)

Platforms and Landings—Where required, shall be No. 12 or No. 13 steel supported on angle frames riveted to stringers and reinforced with tees not more than 2 ft. on centers. Where stair walls are not of bearing kind, struts or hangers are to be supplied.

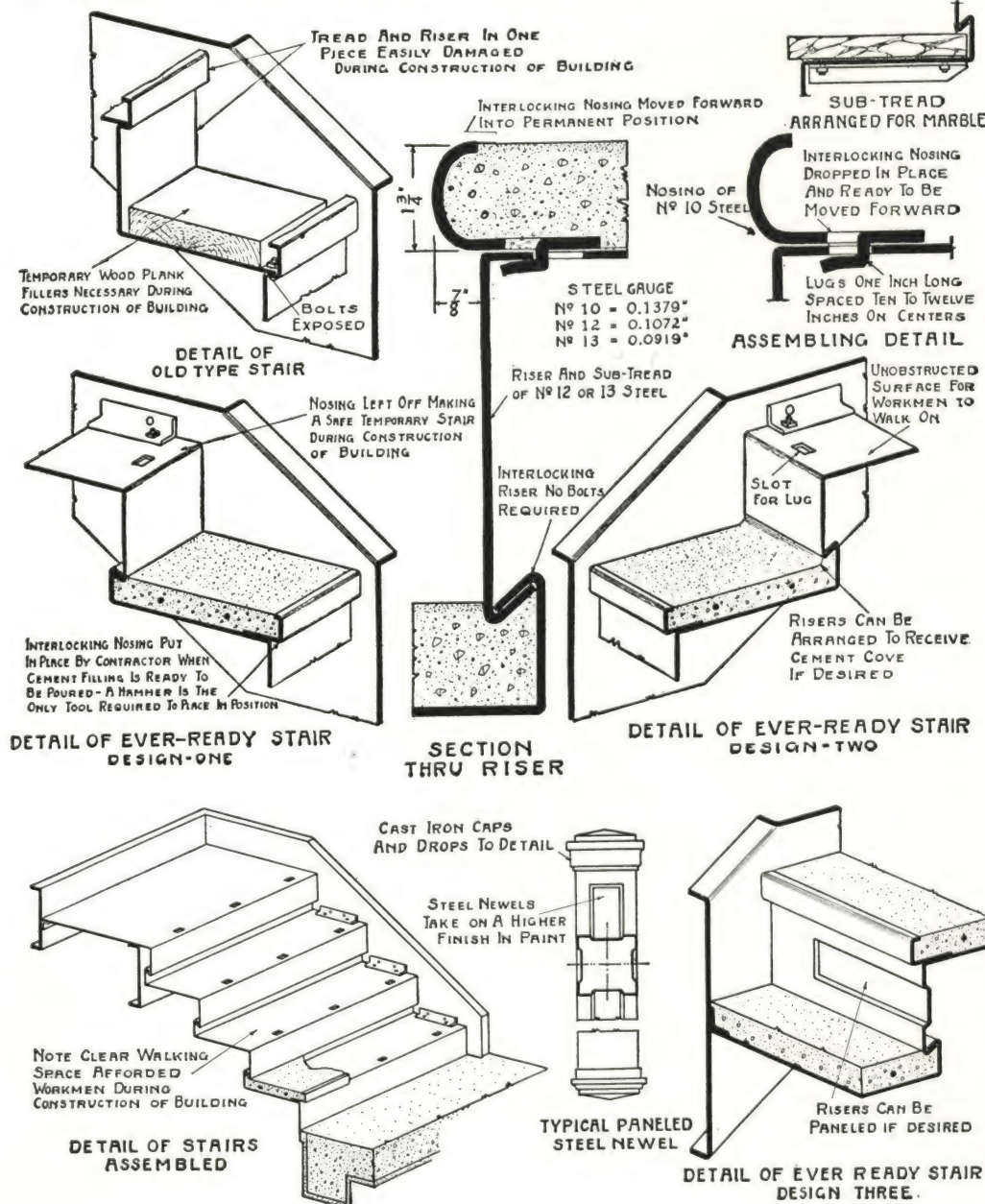
Newels—Of No. 12 blue annealed steel with sunken panels and cast iron caps and pendants as shown.

Railings—To be of design shown on drawings, top channels punched to receive wood hand rails supplied by others.

Painting—The entire stairwork to receive a coat of shop paint, except that part of treads where concrete fill is used.

Estimates

Send plans or sketches and we will gladly furnish preliminary estimates promptly.



FOUNDED 1850

JONES & LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

Jones & Laughlin Building
PITTSBURGH, PA.

For Sales Offices and Warehouses, see pages on Tubular Products

Products

J & L LIGHT WEIGHT CHANNELS for Stair Stringers and other uses.

Also J & L Structural Shapes and Fabricated Structural Work, Columns, Girders, Trusses, Plate Work, Tanks, Mill and Factory Buildings; Steel Piling; J & L Wire Products; J & L Bars for Concrete Reinforcement.

For J & L Junior Beams, and Tubular Products, see page numbers in File Index.

Description of J & L Light Weight Channels

J & L Light Weight Channels are produced on modern rolling mills and are similar in type to standard channel sections.

They have constant dimensions, making fabricating and fitting to other work economical.



Due to the rolled shape, the material is ready, as received, for fabrication into various uses, including stair stringers, thereby saving time.

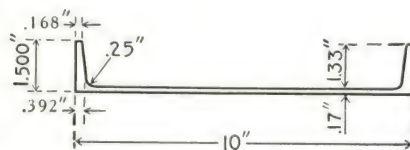
The rolled shape also reduces to the minimum shop equipment for fabrication. J & L Light Weight Channels are economical in weight and form a strong structure. The lines are straight and true, resulting in proper fitting at the joints, thus making a well-finished installation.

These sections are now available in two sizes: 10 in. 8.4 lb. per ft. and 12 in. 10.6 lb. per ft.

J & L Light Weight Channels are available for immediate shipment from the following points: Chicago, Cincinnati, New Orleans, Pittsburgh and Detroit. Carried in lengths of 20, 25, 30, 40 and 50 ft.



Typical Installation



Dimensions above are for C-752
See table below for C-700



DIMENSIONS

Section index	Depth of channel, in.	Wt. per ft., lbs.	Flange width		Web thickness	
			In. and decimal parts	In. and fractional parts	Decimal parts of in.	Fractional parts of in.
C-752	10	8.4	1.500	1 1/2	.170	11/64
C-700	12	10.6	1.500	1 1/2	.190	3/16

PROPERTIES OF SECTIONS

Area, sq. in.	Axis X-X (perpendicular to web)			Axis Y-Y (parallel to web)			
	I	r	S	I'	r'	S'	n'
2.47	32.3	3.61	6.5	0.33	0.37	0.28	0.29
3.12	55.8	4.23	9.3	0.39	0.35	0.32	0.27

ALLOWABLE LOADS

	Index No.	Depth of chan- nel, in.	Wt. per ft., lbs.	Bend mom., ft. lbs.	Max. load	Span, feet																									
						2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Total load in thousan- s of pounds	C-752	10	8.4	9680	40.8	Fiber Stress, 18,000 Lbs. per Sq. In.																									
						38.7	25.8	19.4	15.5	12.9	11.1	9.7	8.6	7.7	7.0	6.5	6.0	5.5	5.2	4.8	4.6	4.3	4.1	3.9	3.7	3.5	3.4	3.2	3.1	3.0	
Total deflection, in.						.007	.017	.030	.047	.067	.091	.119	.151	.186	.225	.268	.315	.365	.419	.477	.538	.603	.672	.745	.821	.901	.985	1.073	1.164	1.259	
Total load in thousands of pounds	C-700	12	10.6	13947	54.7	Fiber Stress, 18,000 Lbs. per Sq. In.																									
						37.2	27.9	22.3	18.6	15.9	13.9	12.4	11.2	10.1	9.3	8.6	8.0	7.4	7.0	6.6	6.2	5.9	5.6	5.3	5.1	4.9	4.6	4.5	4.3		
Total deflection, in.						.006	.014	.025	.039	.056	.076	.099	.126	.155	.188	.223	.262	.304	.349	.397	.449	.503	.560	.621	.684	.751	.821	.894	.970	1.05	
Load in lbs. per lin. ft. of channel	C-752	10	8.4			19360	8604	4840	3098	2151	1580	1210	956	774	640	538	458	395	344	303	268	239	215	194	176	160	146	134	124	115	
	C-700	12	10.6			12398	6974	4463	3100	2277	1743	1378	1116	922	775	660	569	496	436	386	344	309	279	253	231	211	194	179	165		
						Fiber Stress, 16,000 Lbs. per Sq. In.																									
Total load in thousands of pounds	C-752	10	8.4	8604	34.0	Fiber Stress, 16,000 Lbs. per Sq. In.																									
						22.9	17.2	13.8	11.5	9.8	8.6	7.6	6.9	6.3	5.7	5.3	4.9	4.6	4.3	4.0	3.8	3.6	3.4	3.3	3.1	3.0	2.9	2.8	2.6		
Total deflection, in.						.015	.026	.041	.060	.081	.106	.134	.165	.200	.238	.280	.324	.372	.424	.478	.536	.597	.662	.730	.801	.875	.953	1.034	1.119		
Total load in thousands of pounds	C-700	12	10.6	12398	45.6	Fiber Stress, 16,000 Lbs. per Sq. In.																									
						33.1	24.8	19.8	16.5	14.2	12.4	11.0	9.9	9.0	8.3	7.6	7.1	6.6	6.2	5.8	5.5	5.2	5.0	4.7	4.5	4.3	4.1	4.0	3.8		
Total deflection, in.						.012	.022	.034	.050	.068	.088	.112	.138	.167	.199	.233	.270	.310	.353	.399	.447	.498	.552	.608	.667	.729	.794	.862	.932		
Load in lbs. per lin. ft. of channel	C-752	10	8.4			7648	4302	2753	1912	1405	1076	850	688	569	478	407	351	306	269	238	212	191	172	156	142	130	120	110	102		
	C-700	12	10.6			11020	6199	3967	2755	2024	1550	1224	992	820	689	587	506	441	387	343	306	275	248	225	205	187	172	159	147		

Note: Loads above lines at left will produce maximum allowable shear in webs; loads above lines at right will produce excessive deflections.

AMERICAN ABRASIVE METALS CO.

IRVINGTON, NEW JERSEY
50 Church Street, NEW YORK, N. Y.

BOSTON, MASS.
CHICAGO, ILL.

PITTSBURGH, PA.
PHILADELPHIA, PA.

LOS ANGELES, CALIF.
SAN FRANCISCO, CALIF.

FERALUN, BRONZALUN, ALUMALUN AND NICALUN ANTI-SLIP WALKWAYS

The Description, Uses, Forms, etc., of Feralun, as Outlined Below, Apply also to Alumalun, Bronzalun and Nicalun Except for the difference in the Metal Matrix

General Description

FERALUN, BRONZALUN, ALUMALUN and NICALUN are the trade names given by the AMERICAN ABRASIVE METALS CO. to its anti-slip abrasive castings, each trade name indicating respectively the metal used as a matrix. Grains of the hardest known electric furnace abrasive product are incorporated in the wearing surface of these castings to provide maximum wear and anti-slip qualities. By a special process of manufacture these grains are *uniformly* and *deeply* impregnated in the face of the castings, so that they become an integral part of the castings and not simply a surface covering.

Durable—Stairs, entrances, platforms or other walkway surfaces equipped with Feralun, Bronzalun, Alumalun or Nicalun will outlast the normal life of the building with no expense for repairs or maintenance. The first cost is the last. The record of these products in subways, schools, public and private buildings, commercial and industrial structures of all kinds throughout the United States is ample support for the above statement.

Safe—The abrasive surface is carried over the nosing edge affording anti-slip protection and wear resistant qualities at the point of greatest wear. The abrasive surface is equally effective wet or dry.

Generally Approved—Feralun and its sister products are universally approved by the Industrial Boards of New York and other states as well as insurance carriers in general. Feralun holds the Grand Prize of the American Museum of Safety.

Special Casting Process—The AMERICAN ABRASIVE METALS Co's Products are:

(1) Produced entirely in that Company's own plant by men whose only interest is to turn out the finest material possible.

(2) Made by a special casting process by means of which the abrasive grains are embedded and held *deep* in the *face* of the casting.

This special process has been developed by the AMERICAN ABRASIVE METALS Co., is protected by patents and is exclusive to that Company.

Assuming the use of the proper abrasive, the life and efficiency of abrasive metal castings depends on



The Cast Iron Tread with the Abrasive Surface

the uniformity of distribution and *depth* of penetration of the abrasive grains.

When Specifying—Architects and engineers can insure their clients getting the maximum in service and anti-slip quality by specifying that the abrasive castings furnished them "shall have the abrasive uniformly distributed over the wearing surface (including the nosing) and impregnating the casting to a depth substantially in excess of $\frac{1}{8}$ in." Or they can specify "Feralun as made by the AMERICAN ABRASIVE METALS Co."

There is no guess work about Feralun or its sister products—no unproved or unprovable assertions.

They have stood the test of time.

Uses of Feralun, Bronzalun, Alumalun and Nicalun

The AMERICAN ABRASIVE METALS Co. has devoted 25 years of experience to the production and improvement of safer and more durable walkway surfaces. Over 85,000 installations include such representative locations as: Stair treads and landings, floor plates, drain and trench covers, elevator and fire door thresholds, freight elevator landings, spiral treads, drainage gratings, entrance door saddles, coal-hole covers and frames, ramp inclines, shipping platforms, etc.

Treads for Concrete Stairs—Anti-Slip—Safe—Economical, quickly and easily installed. Eliminate future repairs, see page 3, plates 1 and 2, for details.

Structural Treads—Anti-Slip—Safe—Light in weight—Inexpensive. Eliminate all maintenance charges, see page 3, plates 3 and 4, and page 4, plate 5, for details.

Spiral Treads and Platforms—Eliminate the slipping hazard where it is most prevalent without increasing the cost of installation. See page 4, plate 6, for details.

Floor Plates—Anti-Slip—Safe—longest wearing. Particularly recommended around moving machinery and when floor is subject to heavy traffic. See page 5, plate 11, for details.

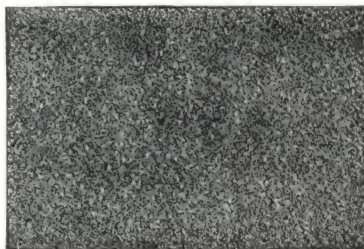
Treads for Repair Work—Make old stairs anti-slip and safe at a minimum of expense. Eliminate necessity for more repair work in future. Satisfactory on any type of worn tread. See next page and page 5, plate 12, for details.

The AMERICAN ABRASIVE METALS Co. is the only manufacturer of Feralun and its sister products, Bronzalun, Alumalun and Nicalun. Consequently architects and engineers who specify Feralun are certain of getting the best product obtainable.

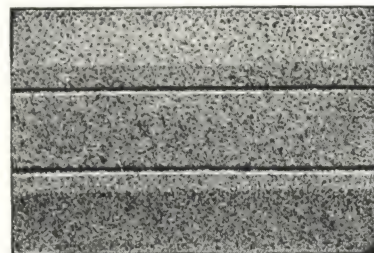
Experience has proven that descriptive specifications such as, "stair treads shall be cast iron with an abrasive surface," are indefinite and subject the owner to the possibility that inferior materials may be used. When closed specifications are inadvisable, therefore, it is strongly urged that instead of descriptive words, the phrase "Feralun or approved equal" be employed. The protection of the owner is thus assured.



Hatch Surface



Plain Surface



Fluted Surface

Swing Door Thresholds—Anti-Slip—Safe—Pleasing in appearance. Will not become hollowed out and worn looking, in service, see page 5, plates 9 and 10, for details.

Elevator Door Sills—Anti-Slip—Safe—Accurately made. A product which will retain its fine appearance for the life of the building, see page 4, plates 7 and 8, for details.

Wherever a Slipping Hazard exists a product of the AMERICAN ABRASIVE METALS CO. can be obtained to correct it.

The company welcomes opportunities to consult with architects, engineers and owners on their problems.

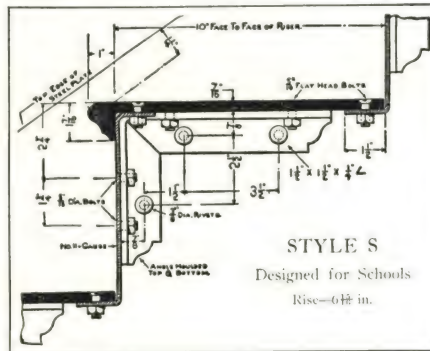
Surfaces—Feralun is ordinarily made in plain, hatch or fluted surfaces as shown. Bronzalun, Alumalun and Nicalun may be obtained in these surfaces or with polished half round flutes. Special surface designs will be furnished if desired.

FERALUN IN SCHOOLS

Stairs in schools are in more constant use than in most public buildings. When made of some materials, these stairs will wear down, chip on the nosing edge, and become smoother and more slippery the longer they are used.

Feralun is proof against all these defects and when once installed will last the life of the building and will be slip-proof.

Feralun Anti-slip Treads were installed in Washington Irving High School, New York, N. Y., in 1913. To date, no accident has been reported and no repairs necessary. The Feralun qualities of safety and durability are easily proved. Inspection of these treads is invited.



Approved by New York Board of Education—Style "S" Feralun Anti-Slip Tread, illustrated herewith, was especially designed for, and approved by, the architects of the New York Board of Education.

In a single year, over 22,000 were installed in new buildings in the City of New York alone.

This style has proved highly satisfactory and is steadily gaining great favor in many localities other than New York.

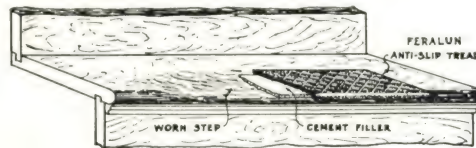
The detail at the left shows the simplicity, sturdiness and neat appearance of this type of construction.

No sub-tread is required as the Feralun Tread is fastened both at the front and back to risers and angles.

FERALUN FOR REPAIR OF WORN STAIRS

Worn stairs of wood, terrazzo, marble, slate or other materials can be made safe and greatly improved in appearance by the use of appropriate abrasive metal castings, Feralun, Bronzalun, Alumalun or Nicalun, at a cost for material and installation that is surprisingly low.

Cast in any size or shape desired, treads for repair work are furnished with a deep lip to cover worn depressions and irregularities in old steps, and with beveled



Detail of Repair

Quick-drying magnesite cement is recommended for use in leveling up worn steps. See page 5, plate 12.

back and ends when the entire surface of existing tread is not to be covered. When repair nosings are to be used in connection with linoleum, or when recesses are provided, the back and ends will be furnished square or slightly undercut. Necessary anchorage is obtained by wood screws or expansion bolts, depending upon the surface covered.

ELEVATOR AND SWING DOOR SILLS—FERALUN SPIRAL STAIRS

Accuracy of fit and finish, beauty of appearance, extreme durability and effective anti-slip protection distinguish all elevator door sills and swing door saddles manufactured by the AMERICAN ABRASIVE METALS CO., the largest producer of elevator door sill castings in the world.

Elevator Door Sills—Each Feralun, Bronzalun, Alumalun or Nicalun sill is furnished with machine-planed grooves and accurate fascia cut-outs, wherever fascia plates are to be used. All holes are carefully drilled. Erection delays and costs are reduced to a minimum.

The same abrasive grains and manufacturing processes which provide the extreme durability and anti-slip properties of Feralun Treads are responsible for the similar characteristics of Feralun, Bronzalun, Alumalun and Nicalun elevator door sills. They will outlast the building and will provide anti-slip protection which will remain unimpaired after years of heavy use. For details, see page 4, plates 7 and 8.

Swing Door Saddles—Even moderately heavy foot traffic over the ordinary door threshold of brass, bronze, marble or cast iron will soon result in worn depressions and a dangerous slippery surface.

Worn thresholds are not only hazardous but present a distinctly "down at the heel" appearance.

The use of appropriate abrasive metal, Bronzalun, Alumalun, Nicalun or Feralun, will insure freedom from such conditions for the life of the building. The extremely hard abrasive grains which completely protect the surface of the threshold will absorb the shock of millions of foot contacts before signs of wear become apparent.

Feralun, Bronzalun, Alumalun and Nicalun swing door saddles are *always easy to install* because of their accuracy of fit and finish. This is particularly important where the saddles are to be used with doors equipped with Rixson hinges or similar door checks. Thresholds with Rixson hinge cut-outs will be furnished in one piece, accurately finished to the proper size, with or without cover plates as desired. See page 5, plate 9 and 10.

Feralun Treads and Platforms for spiral staircases are easily assembled on the job, are inexpensive and have the highest factor of safety. They are neat in appearance and make an ideal installation in schools, churches, office buildings, banks, warehouses, etc.

Feralun Spiral Treads and Platforms are cast complete in one piece with collar and flange or riser. The thickness of the tread is usually $\frac{3}{8}$ to $\frac{1}{2}$ in. according to requirements. The hole in the collar is made for a $3\frac{1}{2}$ or 4-in. O. D. pipe. The length of treads vary from 22 to 48 in. Send for list of stock sizes.

The riser of each tread rests on the tread of the step below; from 12 to 16 treads to the circle. Riser heights and the number of treads to the circle are dependent upon the height between floors.

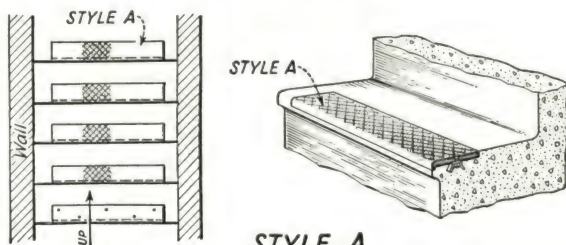
In order that sufficient headroom be provided under the top platform, risers should have a minimum height of 8 in.

Hand rail spindles and center pipe furnished by others.



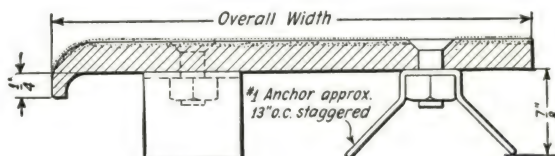
Spiral Staircase with Feralun Treads

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



STYLE A

treads are usually 6" or 8" shorter than distance between walls or stringers.



STYLE A

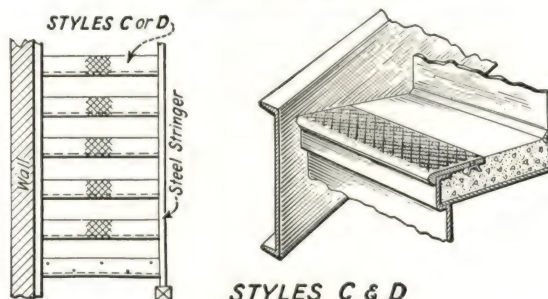
Recommended practice

Thickness	Feralun	Bronzalun	Nicalun	Alumalun	Length
1/4"	Not made	Up to 6" wide	Up to 6" wide	Up to 14" wide	Over 9'-6" made in sections, except when width exceeds 32", then length must not exceed 7'-6"
3/8"	Up to 6" wide	12"	12"	30"	
1/2"	12"	18"	15"	36"	
5/8"	24"	24"	18"	40"	
3/4"	32"	30"	24"	44"	
7/8"	44"	44"	30"	44"	
1"	44"	44"	36"	44"	

Treads for Concrete

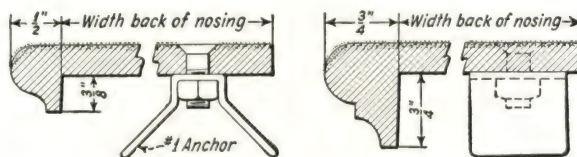
PLATE 1

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



STYLES C & D

extend from stringer to stringer



STYLE C

STYLE D

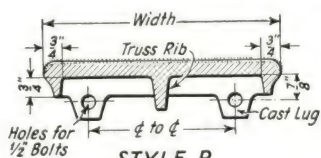
Recommended practice

Thickness	Feralun	Bronzalun	Nicalun	Alumalun	Length
1/4"	Not made	Up to 6" wide	Up to 6" wide	Up to 14" wide	Over 9'-6" made in sections, except when width exceeds 32", then length must not exceed 7'-6"
3/8"	Up to 6" wide	12"	12"	30"	
1/2"	12"	18"	15"	36"	
5/8"	24"	24"	18"	40"	
3/4"	32"	30"	24"	44"	
7/8"	44"	44"	30"	44"	
1"	44"	44"	36"	44"	

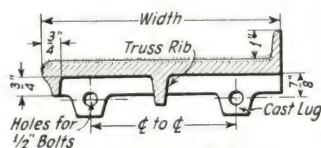
Treads for Pan-Filled Construction

PLATE 2

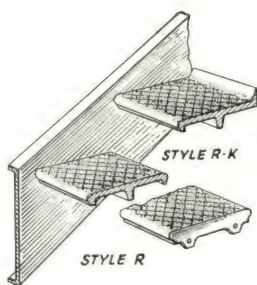
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



STYLE R



STYLE R-K



STYLES R & R-K with cast lugs for bolting treads direct to stringers.

Recommended practice
STYLES R, R-K & O-O

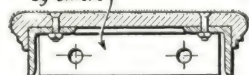
Thickness	Length
Not over 42" long	7/16"
" " 57" "	1/2"
For extra heavy loads submit inquiry.	

Hole Spacing R & R-K

Width	5"	6"	7"	8"	9"	10"
g to g	2"	3"	3 1/2"	4"	5"	6"

STYLE O-O

carrier and end angles by others



STYLE O-O

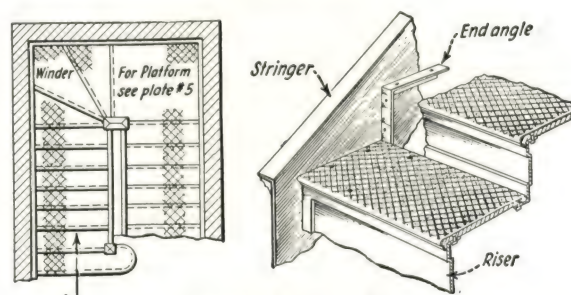
When supported by longitudinal carrier angles Style O-O may be 3/8"

Above styles also made with perforations for drainage. For details see plate #11 or submit inquiry.

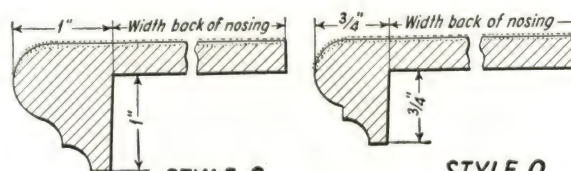
Structural Treads (no risers required)

PLATE 3

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



STYLES O & S with bent risers



STYLE S

STYLE O

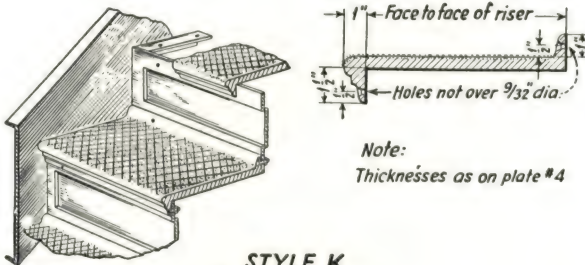
Recommended practice for Feralun

Thickness	Length
Up to 12" wide	3/8" Up to 9'-6" in one piece.
" " 24" "	7/16" " " " " " "
" " 32" "	1/2" " " " " " "
When over 1/2" thick see plate #1	

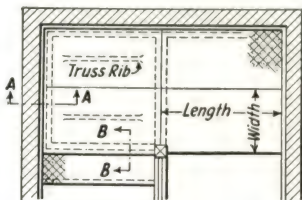
Structural Treads (risers required)

PLATE 4

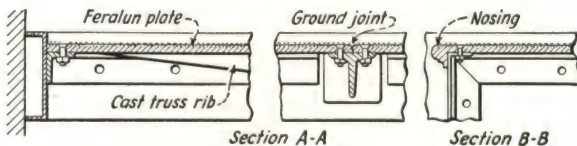
ABRASIVE - METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



STYLE K
with straight risers



<i>Recommended practice</i>	
Up to 32" wide	1/2" thick
" " 44" "	5/8" "
<i>Plates not to exceed 44"x80"</i> <i>(See Plate 1.)</i>	
<i>For extra heavy loads</i> <i>submit inquiry</i>	

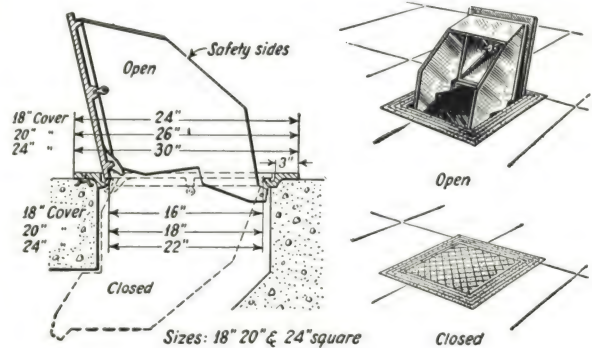


PLATFORMS

Structural Treads (risers required) - Platforms

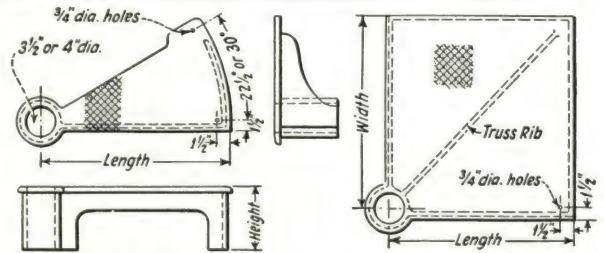
PLATE 5

ABRASIVE - METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



SAFETY COAL HOLE COVER

Also round covers in 18", 20" & 24" diameter.



SPIRAL TREAD

SPIRAL PLATFORM

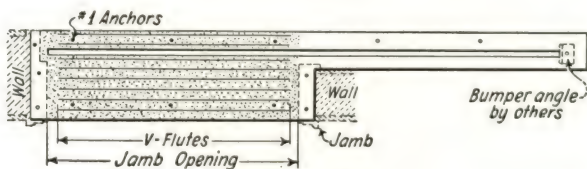
Length 22" to 48"

Minimum height 8¼" to allow sufficient headroom.

Coal Hole Covers - Spiral Treads

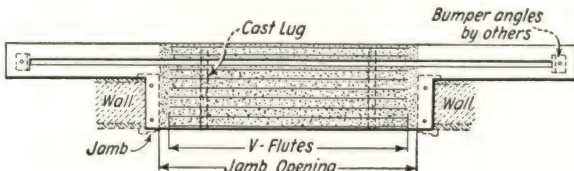
PLATE 6

ABRASIVE - METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



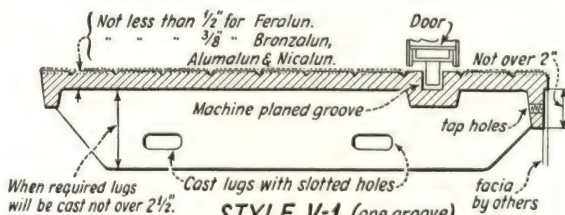
STYLE V-1

for single speed type elevator enclosure



STYLE V-1

for bi-parting type elevator enclosure



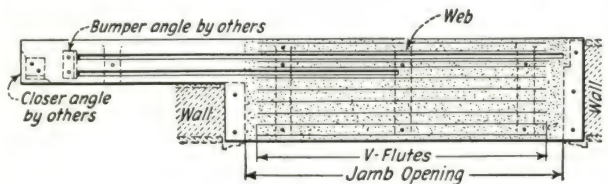
STYLE V-1 (one groove)

Sills over 9'-6" made in sections

Elevator Door Sills

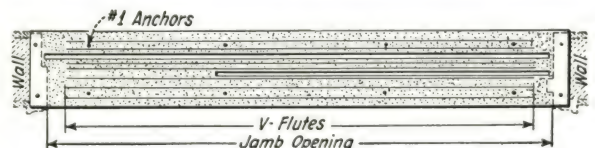
PLATE 7

ABRASIVE - METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



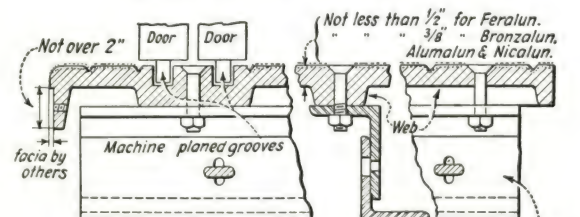
STYLE V-2

for two speed type elevator enclosures



STYLE V-2

for two speed and swing type elevator enclosures



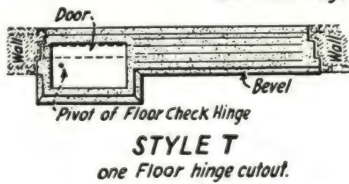
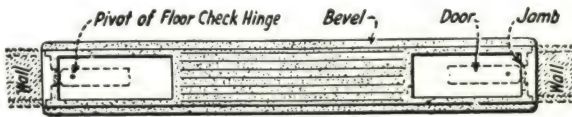
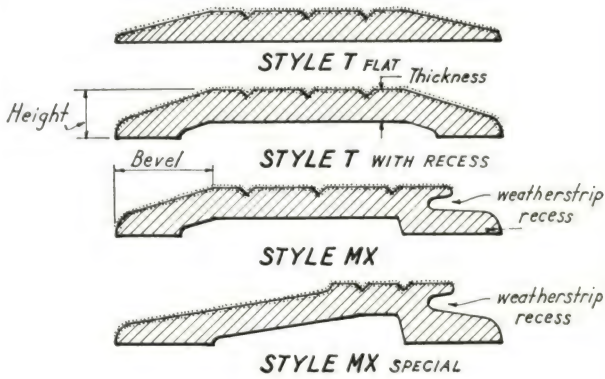
STYLE V-2

Sills over 9'-6" made in sections.

Elevator Door Sills

PLATE 8

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS

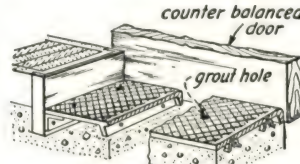


Recommended practice
Usually $\frac{1}{2}$ " high
For thickness and
width limitations
see PLATE #1.

Door Saddles

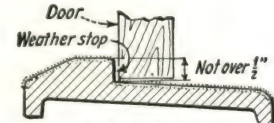
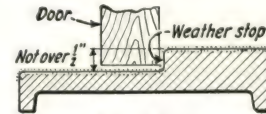
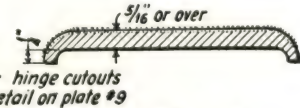
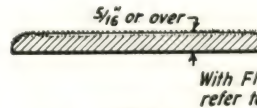
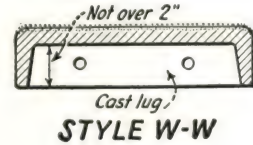
PLATE 9

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



Recommended practice

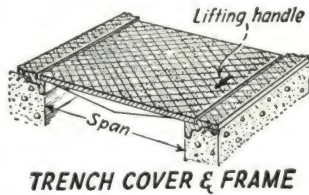
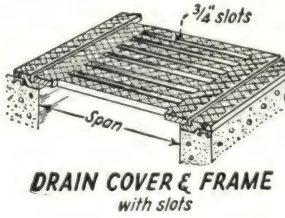
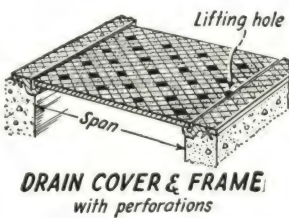
$\frac{1}{2}$ " thick for Feralun
$\frac{3}{8}$ " " " { Bronzalun, Alumalun & Nicalun.
Over 9'-6" made in sections



Door Saddles

PLATE 10

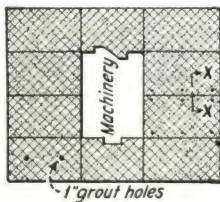
ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



Recommended practice

Span up to 32"	$\frac{1}{2}$ " thick
" " " 44"	$\frac{5}{8}$ " "
" " " 44"	$\frac{3}{4}$ " "

Plates not to exceed 44" x 80"
For extra heavy loads
submit inquiry



Recommended practice

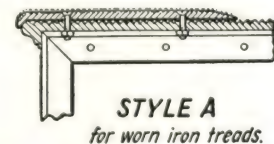
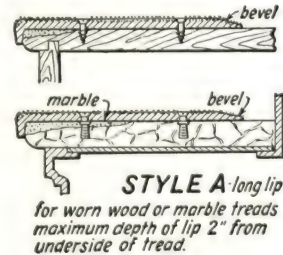
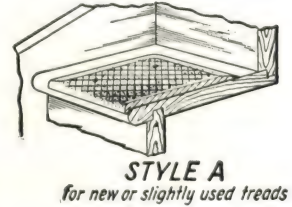
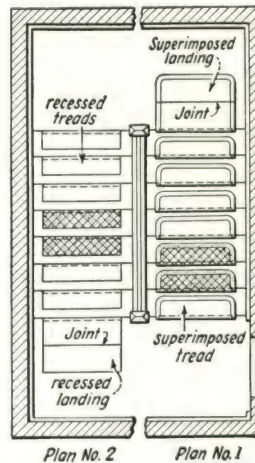
$\frac{1}{2}$ " thick up to 32" x 54"
$\frac{5}{8}$ " " " 44" x 60"
$\frac{3}{4}$ " " " 44" x 80"

(See Plate 1.)

Floor Plates - Trench Covers

PLATE 11

ABRASIVE-METAL
FERALUN BRONZALUN
ALUMALUN NICALUN
ANTI-SLIP PRODUCTS



Notes:-

Plan No. 1 shows superimposed
treads with back edge and
ends bevelled.
Plan No. 2 shows recessed
treads with back edge and
ends squared.

Recommended Practice:-
Treads should extend to within
2 1/2" of riser and stringers.

Treads for Repair Work

PLATE 12

SPECIFICATIONS FOR ANTI-SLIP SAFETY TREADS

Safety Treads—All concrete and cement finished steps, including nosing edges of platforms and landings, shall be provided with Feralun Anti-slip Treads, Style [A, C or D] as made by the AMERICAN ABRASIVE METALS CO. Treads on cement finished steps, pan-filled type, shall be [3½, 4 or 6 in.] wide and shall extend the full length of the step. Style A treads on concrete steps shall be [3½, 4, or 6 in.] wide and extend to within [3 or 4 in.] of the strings. Style [C or D] treads shall be [4, 4½, 6 or 7½ in.] wide and shall extend the full length of the step. Treads shall be set flush with the cement surface and shall be firmly secured in the concrete by steel anchors. The surface of the treads shall be kept free of cement.

Concrete Ramps—All concrete ramps shall be provided with Feralun Anti-slip Strips, as made by the AMERICAN ABRASIVE METALS CO. not less than 4 in. wide, spaced not over 4 in. apart and extending to within [3 or 4 in.] of the walls on either side. These strips shall be set flush with the cement surface and shall be securely anchored in the concrete by steel anchors. The surface of the strips shall be kept free of cement.

Steel Stairs with Risers—Steel stairs shall be constructed of channel strings, steel plate risers and Feralun Anti-slip Treads, Style [O, S or K] as made by the AMERICAN ABRASIVE METALS CO., and as shown on the drawings. Treads shall be securely bolted to supporting angles and to the risers. Platforms and landings shall be made of Feralun Anti-slip Material, of suitable thickness for the span required.

Steel Stairs without Risers—Steel stairs to [boiler room, elevator machine rooms, and to mezzanine or other overhead platforms, etc.] shall be constructed of channel strings, without risers, and with Feralun Anti-strip Treads as made by the AMERICAN ABRASIVE METALS CO. Treads shall be Style [R or R-K] with end lugs [5, 6, 8, 9 or 10 in.] wide, bolted directly to the strings, or Style O-O bolted to carrier angles which are attached to the strings. (See Plate 3 for required thickness.) (If perforated treads are required for drainage, specify Style R-G.)

Spiral Stairs—Spiral stairs to mezzanine platforms and in restricted areas shall be constructed to the diameters required [36 to 78 in.] with center pipe, treads, railings, and platforms as shown on the drawings. Treads and platforms shall be made of Feralun Anti-slip Material as made by the AMERICAN ABRASIVE METALS CO.

Door Saddles—Exterior entrance, fire and roof doors shall be provided with saddles of [Feralun, Alumalun, Bronzalun, Nicalun] anti-slip material as made by the AMERICAN ABRASIVE METALS CO., Style [T, L or M] with [fluted, plain or hatched] surface. Saddles shall be full width of wall and extend the full width of door opening. Style T Saddles shall be made with beveled edges and ends cut to fit the door jambs. When required, saddles shall be cast to receive floor check hinges. Style M Saddles shall be made with rebate to act as weather stop.

Interior doors shall be provided with [Feralun, Bronzalun, Alumalun, Nicalun] Anti-slip Saddles, Style [T, L or A-A] with [fluted, plain or hatched] surface. Saddles shall be full

width of partition wall and shall extend the full width of door opening between jambs. Ends shall be cut to fit the door jambs.

Door saddles shall be firmly attached to new concrete by steel anchors. They shall be secured to old concrete and marble by expansion bolts and to wooden floors by wood screws.

Elevator Door Sills—Passenger elevator door openings shall be provided with sills of [Feralun, Bronzalun, Alumalun, Nicalun] anti-slip material with fluted surface as made by the AMERICAN ABRASIVE METALS CO. Sills for sliding doors shall have grooves machined in the solid casting and machined recess for lip on the shaft side to receive fascia plate. Sills for sliding doors shall be full width of wall thickness plus sufficient width to permit the doors to slide back of the wall, and shall extend the full length of shaft opening.

Sills for swing-door elevator openings shall be made of [Feralun, Alumalun, Bronzalun, Nicalun] anti-slip material, Style W, with [fluted, plain or hatched] surface and with cut outs for Rixson hinges if required. The lip on the shaft side shall be machined to receive the fascia plate, if required. Sills shall be full width of the wall thickness and extend the full width of the opening between jambs.

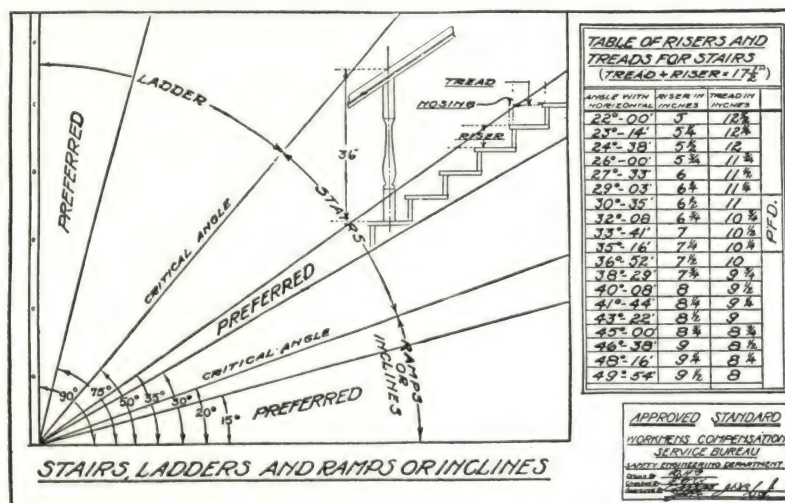
Freight elevator door openings for counterbalanced doors shall be provided with sills of Feralun anti-slip material, Style W, hatched surface, with lip extending down the shaft side. They shall be full width of the wall thickness and extend the full width of the opening between jambs.

Floor Plates—Floor plates [for press rooms, boiler rooms, platforms around machinery and in similar locations] shall be of Feralun anti-slip material, hatched surface, as made by the AMERICAN ABRASIVE METALS CO. Plates shall be cast with truss ribs and be of sufficient thickness to support a live load of 150 lbs. per sq. ft. (or as required). All necessary holes shall be drilled in the plates for attaching them to the steel supports.

Trench covers and frames as indicated on the plans shall be made of Feralun anti-slip material of the dimensions and thicknesses shown on the detailed drawings.

Coalhole Covers and Frames—Where shown on the drawings, install (number) Feralun Safety Coalhole Covers and Frames [18, 20, or 24 in.] square, complete with safety sides, as approved by the Department of Public Works, New York, N. Y.

Safety Treads for Repair Work—Worn stair treads of [wood, marble, slate, stone, concrete, terrazzo, or iron] shall be repaired by placing over them [Feralun, Alumalun or Bronzalun] Anti-slip Treads, Style A, as made by the AMERICAN ABRASIVE METALS CO. For badly worn treads the new treads shall have a lip sufficiently deep to cover the worn nosing. The treads shall extend to within [3 or 4 in.] of the strings and to within 2½ in. of the riser. Superimposed treads shall have beveled back edges and ends. Before setting superimposed treads, all worn parts of the old treads shall be leveled up with quick setting magnesite cement. Recessed treads shall have square backs and ends. New treads shall be firmly secured to the old treads by [wood screws or expansion bolts].



AMERICAN BLUE STONE COMPANY

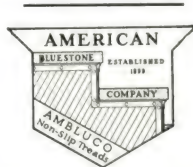
*AMBLUCO NON-SLIP BLUE STONE STAIR TREADS AND FLOORING

QUARRIES AND MILLS
AMBLUCO, WYOMING CO., N. Y. 101 Park Avenue, NEW YORK, N. Y.

Products

AMBLUCO NON-SLIP STAIR TREADS and LANDINGS for interior steel and concrete stairways; AMBLUCO FLOORING, THRESHOLDS and WALL BASE for interior and semi-interior uses.

For Genesee Valley and "North River" Blue Stones for exterior uses, and *Natural-cleft Flagging, see File Index.



*Reg. U. S. Pat. Off.
"A Product with
a Real Guarantee"

The density of the stone's structure which helps to give the remarkable wearing quality is revealed comparatively in the following table:

CRUSHING STRENGTH	
Rockport granite (Kidder's Hand Book)	17,750 lb. per sq. in.
Vermont marble	13,500 lb. per sq. in.
Genesee Valley blue stone	19,970 lb. per sq. in.

This blue stone weighs only, approximately, 150 lb. per cu. ft. (or 25 lb. per sq. ft. 2 in. thick) when cut ready to set.

Sanitary—AMBLUCO Non-slip Treads and Landings are easily kept sanitary. Their great hardness prevents generation of dust and permits clean sweeping and mopping. The flat, non-porous surface has no grooves or pores to collect filth and disease germs. The soffits may be painted without danger of the stain coming through the stone to the top surface.

Quiet—They are practically noiseless and do not resound from footsteps nor become loose and rattle. This quiet feature is a truly essential quality for most buildings, and especially for hospitals where many human beings are undergoing great suffering, and for schools where it is so important that the pupils' minds are not distracted from their work.

Fire Resisting and Rust-proof—The AMBLUCO Treads and Landings offer great resistance to extreme heat and are of inestimable value in fire-proof construction. In contrast to many other treads these AMBLUCO treads do not become rusty themselves nor stain other adjacent materials.

Permanent and Economical—"Lasts the life of a school" is a fitting slogan, for, as indicated by tests and

Facilities

This company has well developed quarries on its own property of about 200 acres, located at Ambluco, Wyoming County, N. Y. The mills and yards are equipped with the most modern machinery so that large volumes of business can be handled without delay.

One building 150 ft. long, devoted exclusively to the storing and finishing of AMBLUCO Products is heated during the cold weather so that orders can also be filled in the winter.

Ambluco Non-slip Stair Treads and Landings

These treads and landings have established themselves wholly on their own merits, with practically no introduction on our part. By those who have studied their qualifications or used them, they are declared to be superior to and more economical than any other type. Millions of square feet in use.

Attractive Color and Texture—Uniform color, even grained texture and standard sand sawed finish (free from saw marks and imperfections) give a splendid appearance. The distinctive light-blue shade blends well with adjacent light color surfaces or gives a sharp clean contrast with dark material. It is a fine, close grained blue stone, made up mostly of pure, hard quartz as shown below:

MINERALOGICALLY CONSIDERED

Fine, hard sand, mostly quartz	70%
Clay, as binding material	28%
Water	2%

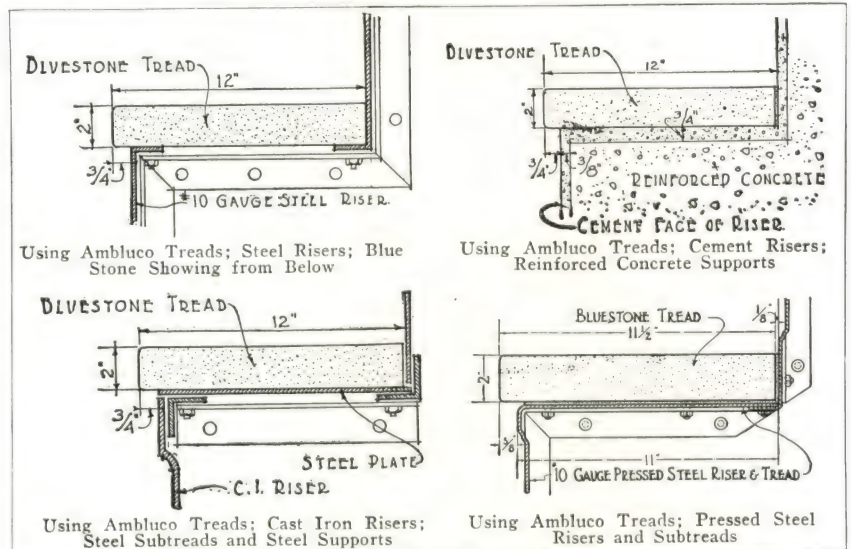
Non-slip—The non-slip property, due to the fine grained quartz, does not grip the foot to cause tripping, but gives ample security against slipping at all times, whether wet or dry, without requiring resurfacing or replacing. These quartz particles are always uniformly distributed throughout the entire stone, a condition that is only produced by nature and prevents the surface from ever wearing smooth.

Durable—The extreme durability of the AMBLUCO Treads comes from the character of the material and the steadily increasing hardness of the stone brought on by the heat of the building, causing the treads to resist wear as they age.



Ambluco Stair Treads, Hartford (Conn.) Fire Insurance Co. Building

PARKER, THOMAS & RICE, Architects
MARC EIDLITZ & SON, Contractors



Details of Ambluco Stair Treads

reputed records, AMBLUCO Non-slip Treads give satisfactory service in an average school for 50 to 60 years, while observance shows that at the existing rate of advancements in scientific design and construction, a school is considered obsolete in that length of time and is frequently replaced by a new building. In fact, there are records where these blue stone treads have been removed in the wrecking of a school and the same treads later installed in a new school.

The initial cost of the AMBLUCO Treads (1½ in. to 2 in. thick) is about the same or less than other natural stone treads and the ultimate cost much less even than the cheap metal and composition treads.

The facility with which they can be set on the regular types of fabricated or pressed steel stair construction eliminates the great expense of specially designed steel members.

No maintenance cost is necessary after these blue stone treads are properly installed.

As a matter of fact, the AMBLUCO Treads and Landings can be safely adopted without first experimenting.

Specification Suggestions — Identification — AMBLUCO

Non-slip Treads and Landings should be called by their trade-name, and although in many localities this name is well known, we suggest also (to avoid substitution of inferior stones) requiring that they are stenciled AMBLUCO and stating that they are produced by the AMERICAN BLUE STONE COMPANY, New York, N. Y.

Samples—AMBLUCO stenciled samples shall be submitted for approval of the architect before commencing the work. Substitution of softer New York or Ohio blue stone will not be accepted.

Finishes — The sand sawed or wet sand rubbed are the only two finishes which should be allowed. The former has proved entirely satisfactory and we endorse it as a standard. Planed and axed surfaces should be avoided as they impair the stone.

AMBLUCO Treads and Landings are universally used 2 in. thick, but can be furnished down to 1½ in. Complete specifications will be supplied upon application.

Accepted as Standard by Prominent Users—

Subsequently to the standardizing on the AMBLUCO Blue Stone Treads by the City of Boston and its many suburbs in their schools and other public buildings, nearly all the rest of New England, recognizing the superior features of these treads, did likewise. Many of the leading school architects in the Eastern, Southern and Middle Western States specify them. The use has not been confined to schools, but has also been extended to other public buildings, such as hospitals, museums, colleges, churches, clubs, railroad stations and high class commercial buildings.

Also AMBLUCO installations are constantly being made to replace worn-out treads of other kinds.

AMBLUCO Treads and Landings are used, for the most part, by architects and engineers long accustomed to incorporating in their specifications the best material for their work.

A Few Ambluco Tread and Landing Installations

Girls' Continuation School, Boston, Mass., Joseph J. Driscoll, Architect
Essex County Sanitarium Buildings, Verona, N. J., Sutton & Sutton, Architects

Taft Upper School, Watertown, Conn., James G. Rogers, Architect
New York State Teachers' College, Buffalo, N. Y., William E. Haugaard, Architect

Legal Research Building, University of Michigan, Ann Arbor, Mich., York & Sawyer, Architects

St. Joseph's Normal Institute, Barrytown, N. Y., James W. O'Connor, Architect

Brookline High School, Boston, Mass., Kilham, Hopkins & Greeley, Architects

Columbia High School, South Orange, N. J., Guilbert & Betelle, Architects

St. Boniface R. C. School, Sea Cliff, L. I., N. Y., Jas. W. O'Connor, Architect

Homeopathic Hospital, Providence, R. I., Kendall Taylor & Co., Architects

Lehigh Valley Railroad Station, Easton, Pa., J. J. McCleece, Architect

Federal Reserve Bank, Boston, Mass., R. Clipston Sturgis, Architect

Liberty Telephone Exchange, Boston, Mass., Parker, Thomas & Rice, Architects

Ambluco Blue Stone Flooring, Thresholds, Wall Base, and Swimming Pool Coping

In these days of the exacting of high liability for accidents to mankind, the fundamental requirement in flooring is that it does not become slippery under any

conditions. In this blue stone flooring, quartz, the essential constituent, being harder than the accessory minerals, is pre-eminent on the wearing surface at all times and makes the floor slip-proof and very durable. Besides the rust-proof, non-porous, dustless and sanitary qualifications of this flooring, it is quiet to walk on.

AMBLUCO Flooring is either 1½ or 2 in. thick and is especially suitable for interior and porch floors in both regular and irregular designs, suggestions of which are shown on the following page. In case of an irregular pattern, it is advisable for economy to limit the number of sizes to about seven. If, however, a greater variety of sizes and shapes is desired, random sawed slabs may be shipped from



Ambluco Flooring, Base, Treads and Risers, Alumnae Hall, Vassar College, Poughkeepsie, N. Y.
HUNT & HUNT, Architects

the quarries, and then fitted and jointed by local cutters on the job. Joints of ⅛ to ¼ in. are usually used for the regular styles and ¼ to ½-in. joints are more in keeping for the irregular style floors.

Its sawed or rubbed finish gives a level surface on which chairs and other furniture do not rock, a feature so annoying with natural split stone.

Other delightfully artistic effects are gained by several methods. One, by varying the finishes—having some pieces sawed with sand and some with steel shot. Another, by omitting the washing of the stone after sawing, which gives a variegated coloring from the rust stain of the saws.

For interior swimming pools it is claimed to be in a class by itself for the border flooring and coping, for it is not dangerously slippery, does not injure the bare feet, and does not deteriorate and necessitate frequent replacements as do some manufactured floorings.

AMBLUCO Flooring is especially appropriate for,

and is being used extensively in churches, cathedrals, museums, libraries, clubs, hotels, railroad stations, residences, high class commercial buildings, and the vestibules and stair halls of hospitals, schools and college buildings.

Perhaps in no place is there greater and more noticeable wear than in thresholds or saddles, and therefore, for this purpose, this AMBLUCO non-slip sand rubbed product is unapproached. These are furnished $1\frac{1}{4}$ to 2 in. thick by the desired widths, and with a choice of bevels.

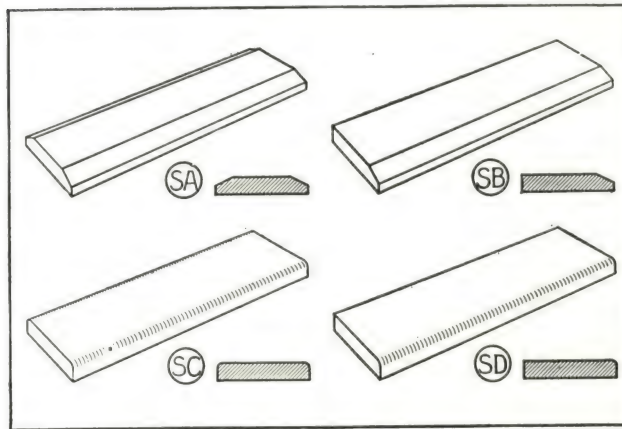
The AMBLUCO Wall Base and Plinths should be used to match the flooring and thresholds, landings and treads. The base and plinths are $1\frac{1}{4}$ to 2 in. thick by 7 to 14 in. high. A $\frac{1}{8}$ -in. radius round on the top front arris is usually given or a slight bevel is occasionally applied.

A fine sand rubbed finish is most appropriate, although the sand sawed finish frequently harmonizes better with certain styles of wall.

Specification Suggestions—It is important that this flooring, thresholds and base are specified by trade-name as described under the AMBLUCO Non-slip Treads.

For Flooring—The vestibules, lobbies, lounges (or whatever places desired) shall be of AMBLUCO Blue Stone, 2 in. [$1\frac{1}{2}$ in.] thick laid in regular [semi-irregular] [irregular] design (if irregular describe idea) with $\frac{1}{4}$ -in. [$\frac{1}{2}$ -in.] joints. It shall be set over a concrete fill and set in, at least 1 in. of mortar composed of 2 parts sand and 1 part portland cement. The joints shall be neatly pointed flush with surface of floor with same mortar, to which shall be mixed enough lamp black or other coloring to produce the desired effect.

For Thresholds or Saddles—All interior doorways for (.....)

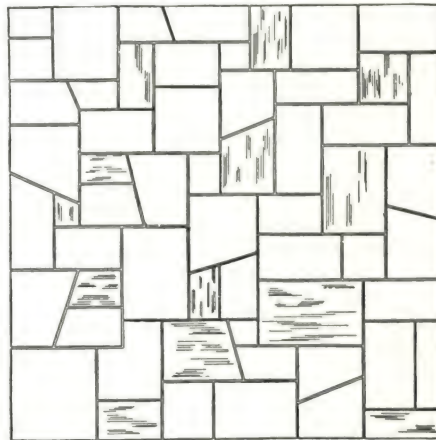


Four Types of Standard Thresholds

floors where cement, ter-razzo or tile floor is used on either side, shall have AMBLUCO Non-slip Blue Stone saddles 2 in. [$1\frac{1}{4}$ in. to 3 in.] thick by the full thickness of the partition wall in width, and the full width of the opening in length, with sand rubbed finish and $1\frac{1}{4}$ in. deep bevel on each side. Joiner strips of AMBLUCO Blue Stone $1\frac{1}{2}$ in. thick by 8 to 10 in. wide shall be used wherever different types of floor meet.

Typical Ambluco Flooring, Base and Threshold Installations

Museum of Fine Arts, Boston, Mass., Guy Lowell, Architect
Cathedral of Incarnation, Baltimore, Md., Bertram G. Goodhue, Architect
Christ Church, Bronxville, N. Y., Bertram Goodhue Associates, Architects
University of Maine Arts & Science Building, Orono, Me., Crowell & Lancaster, Architects
Baker Chocolate Co., Dorchester, Mass.
Dr. Walter Timme's Art Wing, Cold Spring, N. Y., John W. Ingle, Architect
Carl Weeks Residence, Des Moines, Iowa, Rasmussen & Wayland, Architects
Pilgrim State Hospital, Pine Aire, L. I., N. Y., Wm. E. Haugaard, Architect

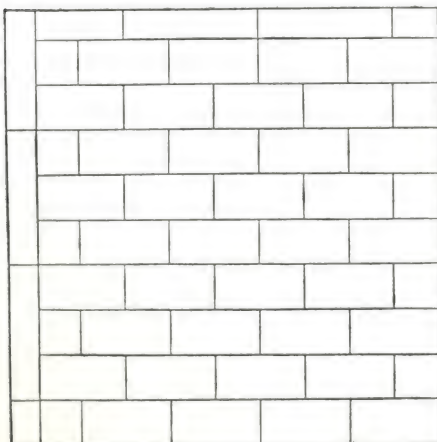


Irregular Design—FD

Random size blue stone slabs, showing variegated effect by combining sand sawed and shot sawed finishes. Laid with broken $\frac{1}{2}$ -in. joints

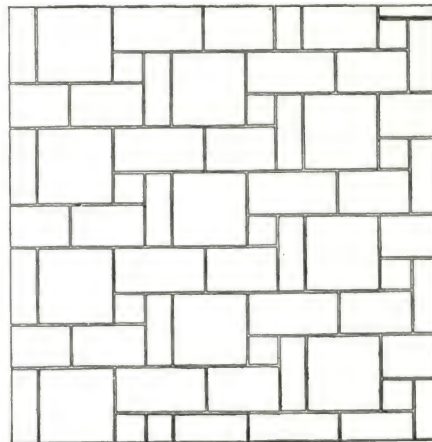
Suggestions for Care of Ambluco Products

After AMBLUCO Treads, Landings, Flooring, etc., have been installed they should be thoroughly scrubbed with sand and water until clean. No acid or other damaging substances should be used. If the light blue color is desired, coat with one or two applications of Truscon's Super Por-Seal. Repeat this six to eight times a year if needed. If it is preferred to have a darker shade, scrub and then paint with raw linseed oil. This can be done as often as will give the best results.



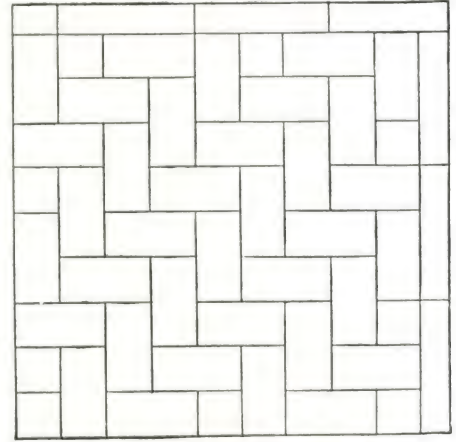
Regular Design—FA

Oblong blue stone slabs 24x12 in. laid with straight joints and transverse joints uniformly broken. Border of blue stone 8 in. wide



Semi-irregular Design—FC

Five different size blue stone slabs laid to a pattern with broken $\frac{1}{4}$ -in. joints



Semi-regular Design—FB

Oblong blue stone slabs laid herringbone. Border of blue stone 8 in. wide

Suggested Designs for Ambluco Flooring

AMERICAN MASON SAFETY TREAD CO.

GENERAL OFFICE AND FACTORY
LOWELL, MASS.

DISTRIBUTORS: JOSEPH T. RYERSON & SON, INC.

NEW YORK, N. Y.
PHILADELPHIA, PA.
BUFFALO, N. Y.

CLEVELAND, OHIO
BOSTON, MASS.
CINCINNATI, OHIO

DETROIT, MICH.
MILWAUKEE, WIS.
CHICAGO, ILL.

ROCKFORD, ILL.
ROCK ISLAND, ILL.
MINNEAPOLIS, MINN.

KANSAS CITY, MO.
ST. LOUIS, MO.
TULSA, OKLA.

Agents in All Principal Cities

CANADIAN DISTRIBUTORS: DARLING BROS., LTD.
WINNIPEG OTTAWA TORONTO

MONTREAL

HALIFAX

CALGARY

VANCOUVER



At Left:
Steel Ribbed Tread
Insert on New
Terrazzo Steps

Above:
Brass Ribbed Treads
Installed on Marble
Stairs in Bank

At Right:
Mason Abrasive Iron
Treads on Indus-
trial Stairs

Typical Installations of Mason Safety Treads

On the stairs of the finest banks and office buildings; department and other stores; courthouses and public institutions; colleges, schools, hospitals, railroad stations, subways, powerhouses, factories, etc., Mason Safety Treads are used to prevent accidents

A TYPE OF MASON SAFETY TREAD FOR EVERY UNDERFOOT SAFETY SERVICE

PRODUCTS

MASON SAFETY TREAD, Ribbed Type (Steel Base—Lead or Abrasive Filled).

MASON SAFETY TREAD, Ribbed Type (Brass Base—Lead or Abrasive Filled).

MASON SAFETY TREAD, Ribbed Type (Aluminum Base—Lead or Abrasive Filled).

MASON ABRASIVE METAL SAFETY TREAD and THRESHOLDS (Iron, Bronze, Aluminum or Nickel).

MASON STRUCTURAL SAFETY TREAD, Abrasive Filled (Iron or Bronze).

MASON THRESHOLDS (Rolled Steel or Extruded Brass).

MASON STAIR NOSINGS and EDGINGS (Extruded Brass or Aluminum).

MASON NON-SLIP LADDER SHOES.

KARBOLITH SANITARY FLOORING.

MASON SAFETY TREAD, Ribbed Type with Rolled Steel Base—Abrasive or Lead Filled

For Use Where Good Appearance in Addition to Safety Is Required

Preventing Accidents with Mason Safety Treads

Of all the devices designed to provide protection against injuries caused by falls, American Mason Safety Treads are recognized by architects, engineers, casualty companies and users as being unsurpassed. Mason Safety Treads provide what is practically positive immunity from slipping.

Mason Safety Treads insure greater durability for stairs of any type and on concrete steps they protect the edge against fracture or chipping and prevent the steps from wearing hollow. In addition, Mason Safety Treads minimize the tracking of dirt into buildings.

Mason Safety Treads Prevent Litigation

Not only do Mason Safety Treads protect the pedestrian, they also protect the owner from accident litigation. It has been repeatedly recognized by judges and juries alike that if a person is injured by a fall on a stair thus equipped it is not the fault of the owner because adequate precaution had been taken to provide safe underfoot conditions.

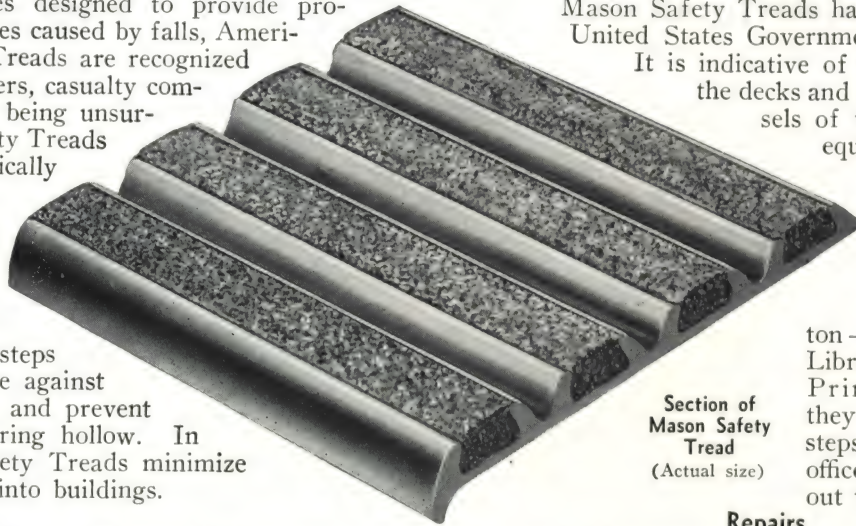
In United States Government Buildings

Mason Safety Treads have been used by the United States Government for many years.

It is indicative of their reliability that the decks and ladders of many vessels of the U. S. Navy are equipped with Mason

Safety Treads and that they are in general use in the larger Governmental buildings in Washing-

ton—the Congressional Library, the Government Printing Office—and they are installed on steps of hundreds of post office buildings throughout the country.



Section of
Mason Safety
Tread
(Actual size)

Repairs

A worn stair, no matter what construction, may be readily renewed by the use of Mason Safety Tread.

Service and Co-operation

Any desired information regarding Mason Safety Treads will gladly be furnished and we will co-operate in the solution of any problem involving the installation of safety tread equipment.

STANDARD SECTIONS—FULL SIZE

Furnished cut to any length, drilled and countersunk. Anchors for concrete furnished when specified.



FIG. 1, Steel Base, 6 in Wide, 7 Ribs.



FIG. 1A, Steel Base, 6 in Wide, 7 Ribs with Nosing.



FIG. 2A, Steel Base, 4 in. Wide, 5 Ribs with Nosing.



FIG. 3, Steel Base, 4 in. Wide, 5 Ribs.



FIG. 3A, Steel Base 3 3/4 in. Wide, 4 Ribs.



FIG. 6, Steel Base 2 1/2 in. Wide, 3 Ribs.

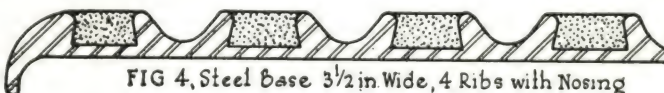


FIG. 4, Steel Base 3 1/2 in Wide, 4 Ribs with Nosing

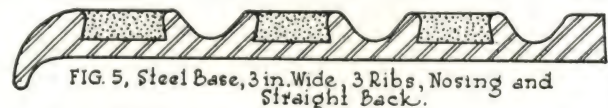


FIG. 5, Steel Base, 3 in. Wide, 3 Ribs, Nosing and Straight Back.

Base is rolled, unperforated steel with alternate U-shaped and dovetailed grooves filled with lead or abrasive

Fig. 5—Especially made for granolithic work or for use with cork backing

MASON SAFETY TREAD Ribbed Type with Extruded Hard Brass or Aluminum Base—Abrasive or Lead Filled

Furnished cut to any length, drilled and countersunk. Anchors for concrete when specified.



FIG. 7 BRASS BASE
FIG. 41 ALUMINUM BASE } 6" wide, 8 ribs, plain

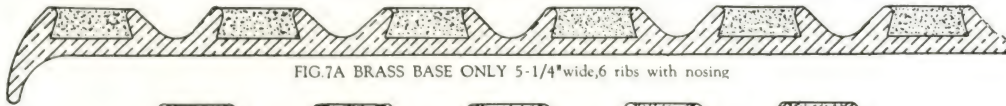


FIG. 7A BRASS BASE ONLY 5-1/4" wide, 6 ribs with nosing



FIG. 8 BRASS BASE
FIG. 40A ALUMINUM BASE } 4" wide, 5 ribs, plain



FIG. 40 ALUMINUM, BASE ONLY 4" wide, 5 ribs with nosing

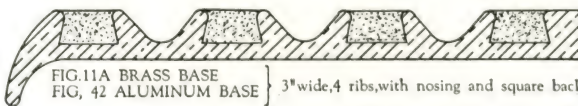


FIG. 11A BRASS BASE
FIG. 42 ALUMINUM BASE } 3" wide, 4 ribs, with nosing and square back



FIG. 9 BRASS BASE
FIG. 39 ALUMINUM BASE } 3" wide, 4 ribs, plain



FIG. 11 BRASS BASE ONLY 3-1/2" wide, 4 ribs with nosing



FIG. 10 BRASS BASE ONLY 2-1/4" wide, 3 ribs, plain

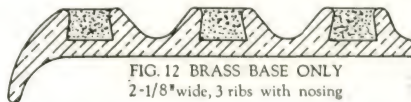


FIG. 12 BRASS BASE ONLY
2-1/8" wide, 3 ribs with nosing



FIG. 14A BRASS BASE ONLY
3-1/2" wide, 4 ribs, with deep nosing

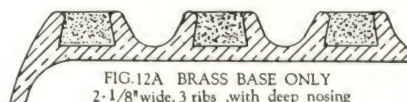


FIG. 12A BRASS BASE ONLY
2-1/8" wide, 3 ribs, with deep nosing

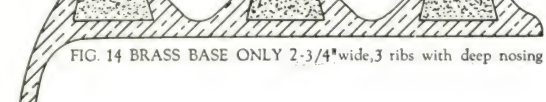


FIG. 14 BRASS BASE ONLY 2-3/4" wide, 3 ribs with deep nosing

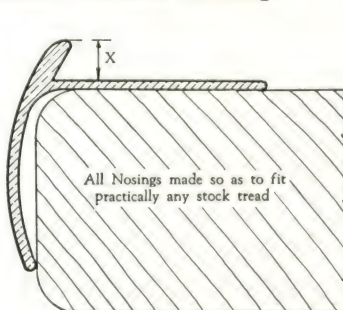
A beautiful protective finish, especially for marble stairs where the bright surface contrasts pleasingly with the white marble

Base of special hard metals extruded with alternate U-shaped and dovetailed grooves, filled with lead or abrasive

SECTIONS FULL SIZE

MASON NOSINGS AND EDGINGS—Extruded Polished Brass or Aluminum

Stairs equipped with Mason Nosings in conjunction with linoleum or other floor covering present a handsome and easily maintained finish. The deep, sturdy lip is projected and undercut to receive and lock the floor covering. This also reinforces the front edge of the stair tread at the point where the wear is greatest. The substantial horizontal web insures permanent concealed fastening.



X Indicates the thickness of floor covering to be used with Fig. No.

X	FIGURE NUMBER
1/8 IN.	18-B
3/16 IN.	18-A
1/4 IN.	18
3/8 IN.	20

DETAILS - FULL SIZE

All Nosings and Edgings furnished drilled and countersunk, cut to required length when specified.

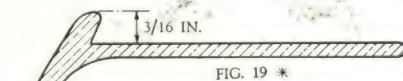


FIG. 19 *

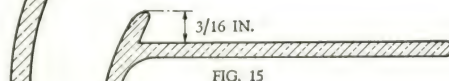


FIG. 15

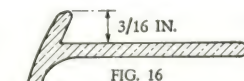


FIG. 16

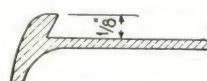


FIG. 50

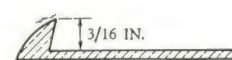


FIG. 50



FIG. 47 * 3/16 IN.

FIG. 46 * 1/4 IN.

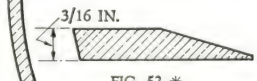


FIG. 52 *

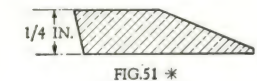


FIG. 51 *

* Brass Only

MASON ABRASIVE IRON—MASON ABRASIVE BRONZE MASON ABRASIVE ALUMINUM MASON ABRASIVE NICKEL—SAFETY TREADS

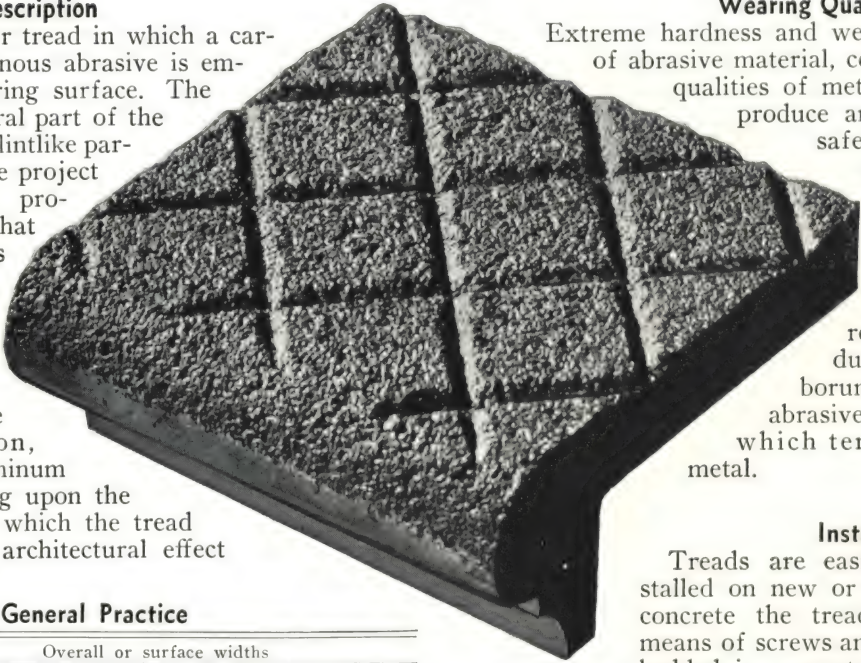
Formerly known as "Carbo-Cast"

Description

A cast safety stair tread in which a carborundum or aluminous abrasive is embedded in the wearing surface. The abrasive is an integral part of the body metal and the flintlike particles of the abrasive project above the surface, producing a surface that effectively prevents slipping whether wet or dry.

Metals

These treads are furnished with the body metal of iron, brass, bronze, aluminum or nickel—depending upon the type of service for which the tread is required or the architectural effect desired.



Wearing Qualities

Extreme hardness and wear-resisting qualities of abrasive material, combined with similar qualities of metal body, combine to produce an extremely durable safety tread—one that will present an effective non-slip surface for a long period despite hard wear. These treads possess a high resistance to corrosion due to addition of carborundum or aluminous abrasive at time of casting which tends to densify the metal.

Installation

Treads are easily and quickly installed on new or old work. On new concrete the treads are fastened by means of screws and metal anchors embedded in concrete. For old concrete, marble, slate, etc., the use of expansion bolts is recommended. Only wood screws are needed to hold treads securely in place on wood stairs.

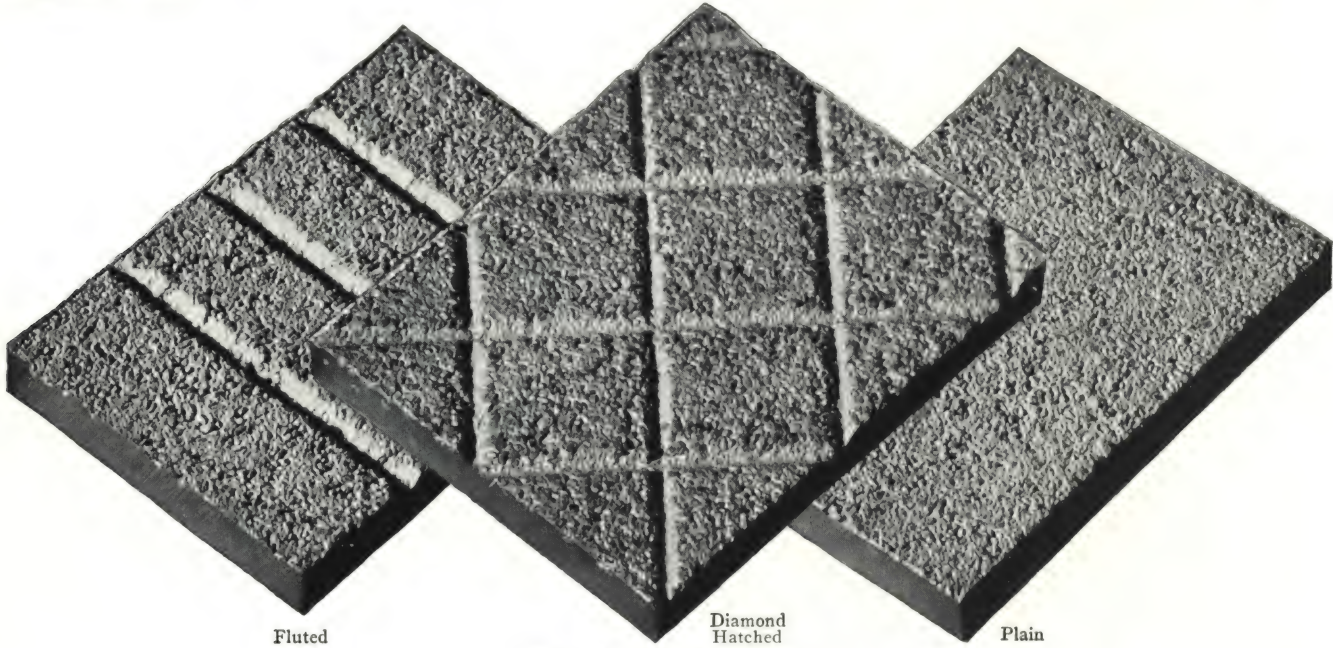
General Practice

Minimum thickness of treads	Overall or surface widths			
	Ab. iron	Ab. bronze	Ab. nickel	Ab. aluminum
1/4 in.	Not made	Up to 6 in.	Up to 6 in.	Up to 14 in.
3/8 in.	Up to 6 in.	Up to 12 in.	Up to 12 in.	Up to 30 in.
1/2 in.	Up to 12 in.	Up to 18 in.	Up to 15 in.	Up to 36 in.
5/8 in.	Up to 24 in.	Up to 24 in.	Up to 18 in.	Up to 40 in.
3/4 in.	Up to 32 in.	Up to 30 in.	Up to 24 in.	Up to 44 in.
7/8 in.	Up to 44 in.	Up to 44 in.	Up to 30 in.	Up to 44 in.
1 in.	Up to 44 in.	Up to 44 in.	Up to 36 in.	Up to 44 in.

Lengths—Not over 9 ft. 6 in. long except when width exceeds 32 in., then length must not exceed 7 ft. 6 in.
Castings not conforming to above made in sections unless special arrangement is made.

Surfaces

Treads are furnished in the three surfaces illustrated below, namely: Fluted, Diamond Hatched and Plain.



Fluted

Diamond Hatched

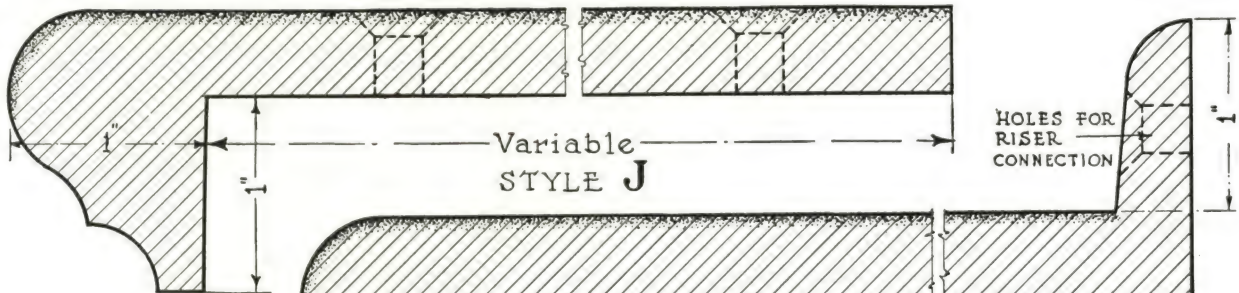
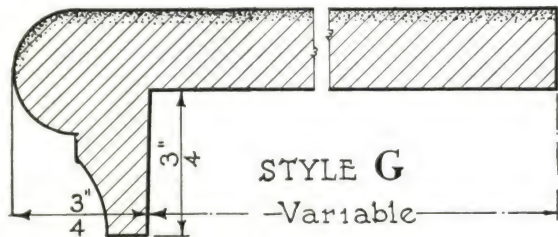
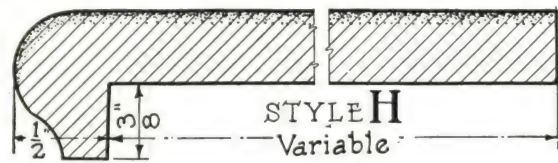
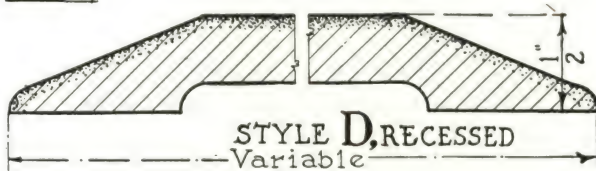
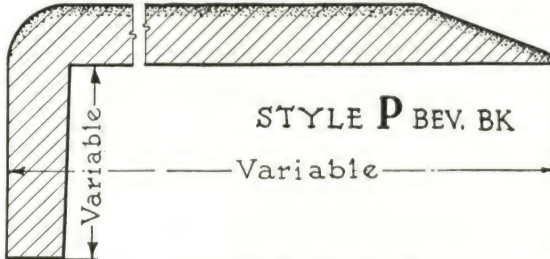
Plain

Various Surfaces in Actual Size

MASON ABRASIVE IRON, BRONZE, ALUMINUM, NICKEL, SAFETY TREADS

For Thickness of Treads, See General Practice

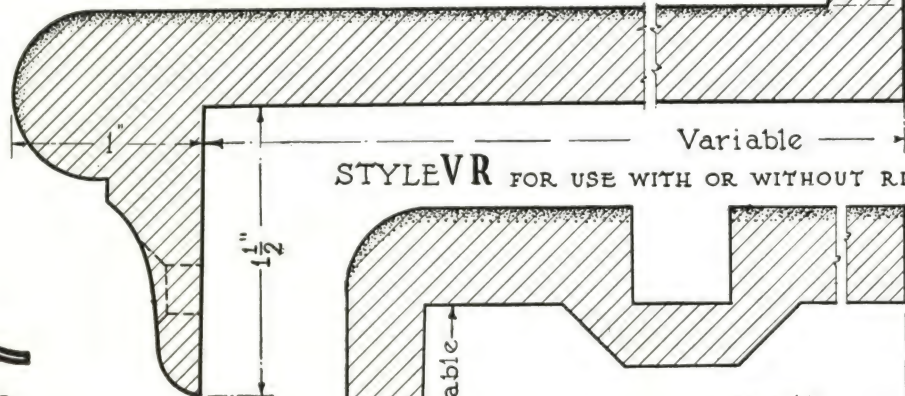
(DETAILS FULL SIZE)



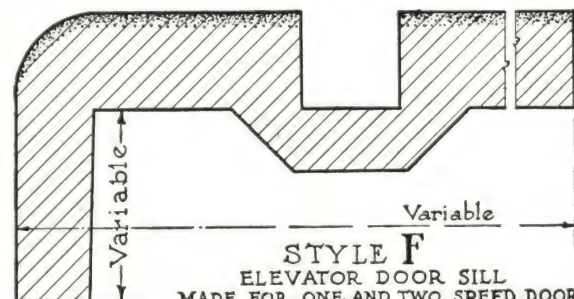
HOLES FOR
RISER
CONNECTION



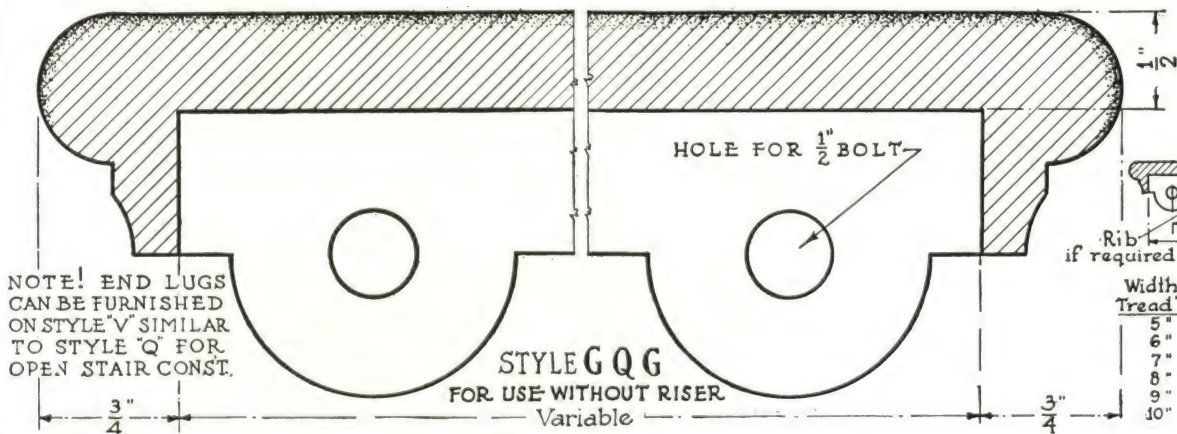
CONCRETE ANCHOR
OR
COUNTERSUNK HOLES
AS REQUIRED



FOR USE WITH OR WITHOUT RISER

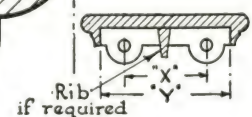


ELEVATOR DOOR SILL
MADE FOR ONE AND TWO SPEED DOORS



NOTE! END LUGS
CAN BE FURNISHED
ON STYLE 'V' SIMILAR
TO STYLE 'Q' FOR
OPEN STAIR CONST.

FOR USE WITHOUT RISER



Width of Tread 'Y'	'X'
5"	2"
6"	3"
7"	3 1/2"
8"	4"
9"	5"
10"	6"

MASON STRUCTURAL ABRASIVE FILLED TREADS

Cast Iron or Cast Bronze with Abrasive Filling Extending Down $\frac{1}{4}$ " Into the Base Metal

Plain Surface

A stair tread cast with one-quarter inch or more deep channels to receive Mason Safety Abrasive Filling. This filling especially prepared and treated, has proven for over twenty-five years its supremacy. In addition the dental (toothed) nosing reinforces and accentuates the front edge of each step, which is an extra wear-resisting quality and safety feature. As a whole this means that when the surface has worn off, instead of being useless as a Safety Tread, Mason Structural Abrasive Filled Tread has just started its life of extreme usefulness as a real Safety Tread. Mason Structural Abrasive Filled Treads save money for owners not only by protecting the public against accidents, but in length of efficient safety life.

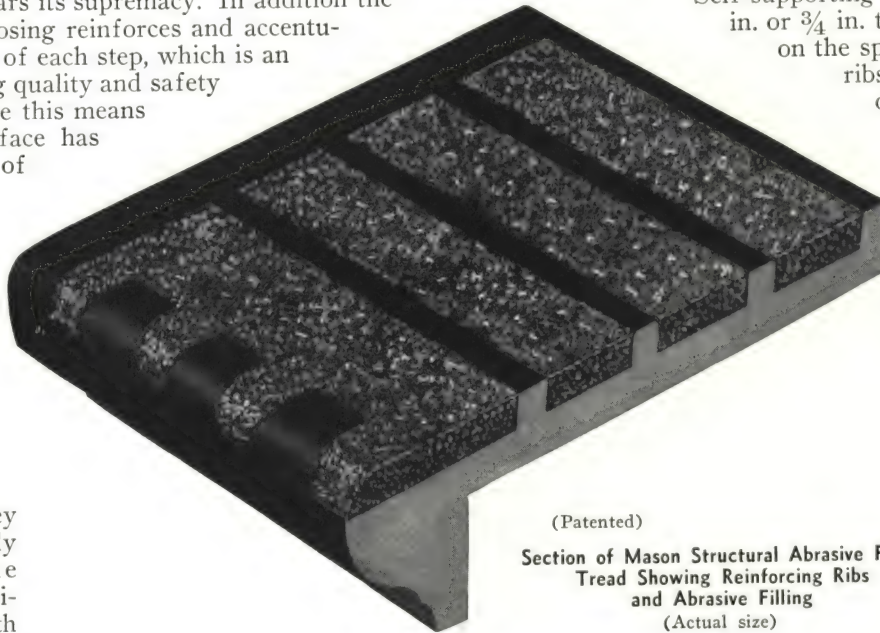
Widths and Lengths

Furnished in any tread width 3 in. and over, in lengths up to 90 in.

General Practice

Self-supporting treads are made $\frac{5}{8}$ in. or $\frac{3}{4}$ in. thick, depending upon the span and load. Truss ribs may be cast on under-side of treads when required. Platforms can be supplied up to 6 ft. long and 6 ft. wide.

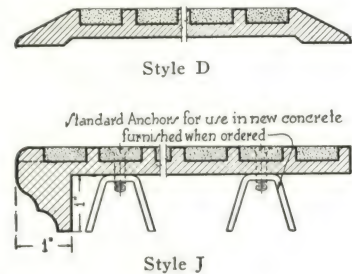
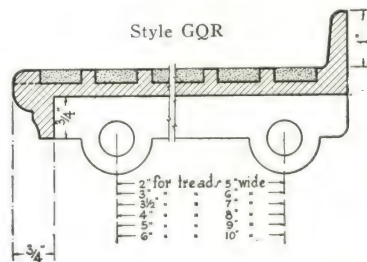
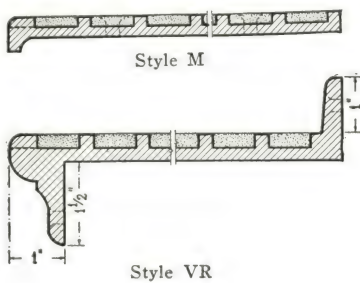
Where treads are to be set in concrete, anchors will be supplied when specified. Minimum thickness of tread, $\frac{1}{2}$ in.



(Patented)

Section of Mason Structural Abrasive Filled Tread Showing Reinforcing Ribs and Abrasive Filling
(Actual size)

DETAILS OF MASON STRUCTURAL ABRASIVE FILLED TREADS



Nosings made similar to Mason Abrasive Metal Safety Treads

MASON DOOR THRESHOLDS

Brass—Corrugated Surface

Width 4 in.; height $\frac{1}{2}$ in.
Width 5 in.; height $\frac{1}{2}$ in.
Width 6 in.; height $\frac{1}{2}$ in.
Furnished cut to length, drilled and countersunk



Rolled Steel Corrugated Surface Only

Width 4 in.; height $\frac{1}{2}$ in.
Width $5\frac{3}{8}$ in.; height $\frac{5}{8}$ in.
Width 7 in.; height $\frac{5}{8}$ in.
Furnished cut to length, drilled and countersunk.

DEL TURCO BROS., INC.

Contractors for Terrazzo and Mosaic
HARRISON, N. J.

NEW YORK OFFICE: 30 Church Street (Hudson Terminal Building)—Telephone, CORTlandt 7-1854

DEL TURCO NON-SLIP "INTEGRO" TREAD

A New Departure in Safety Treads

The Del Turco INTEGRO Tread is a reinforced pre-cast terrazzo unit with inlaid alundum aggregate inserts which will provide the necessary foot friction under all wet or dry conditions and under all other requirements of use.

Advantages

Correct Non-slip Effect—The alundum aggregate inserts are made with an exactly predetermined degree of non-slip effect in exactly the proper location on tread and nosing. There can be no accidental defects in the mixture nor any variation in surface texture of the abrasive. The foot friction is positive under all wet or dry conditions and there is no corrugation or projection to catch and hold the foot or heel. The Del Turco INTEGRO Tread is a scientifically correct product.

Permanently Durable—Alundum is one of the hardest of substances and in the form used in Del Turco INTEGRO Treads it will outlast the needs and requirements of normal use.

Permanently in Place—The name INTEGRO is descriptive of the fact that the alundum inlay is an *integral* part of the terrazzo construction of the tread. It cannot become loose or detached.

Attractive Appearance—The Del Turco INTEGRAL Tread is essentially architecturally appropriate in design and the materials used are naturally and harmoniously decorative. Appearance is not sacrificed for the sake of utility. Patterns of inlay and color effects may be varied. Color contrast may be suppressed or achieved at will. Metal strips may be used to outline the alundum inlay where so desired.

Moderate in Cost—The Del Turco INTEGRO Tread, completely installed, will compete favorably in price with any other material, system or device which approaches it in quality or effectiveness. It is a superior product of a quite "different" kind.

Broadly Adaptable—The Del Turco INTEGRO Tread is suitable for use in all good construction and is particularly adaptable to buildings of public use where utilitarian and artistic effects must be combined.

Cleanliness—Del Turco INTEGRO Treads are easily cleaned. There are no grooves to hold dirt and where the design shows contrast in color the effect of soiling or discoloration is disguised.

Manufacture and Distribution

The Del Turco INTEGRO Tread is manufactured by the vibratory method in our plant, which is equipped with suitable machinery. It is properly reinforced, cured, finished and delivered to the building ready to be set in place. It is installed in cement mortar by marble setters in the same manner as marble.

When installed over steel stairs, it should be secured to the sub-tread by means of our Dovetail Anchor method (shown at right) the anchor channel for which is provided in the manufactured tread.

Lengths Up to 8 Ft.—Del Turco INTEGRO Treads are made in lengths up to about 8 ft. It is always made to order, it being impractical to carry it in stock.

When so desired treads and risers may be formed integrally.

We sell the Del Turco INTEGRO Tread through marble contractors or we install it ourselves, when a marble contractor is not available.

Specifications

(Under Marble Work)

Furnish and set wherever shown on the drawings Del Turco INTEGRO Non-slip Treads as made by DEL TURCO BROS., INC., Harrison, N. J.

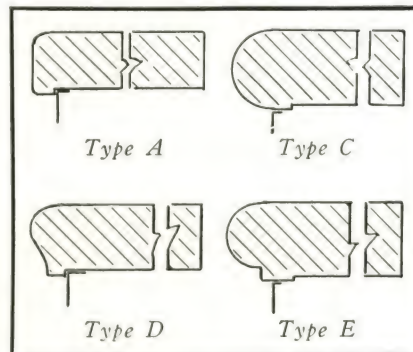
These treads shall be 1½ in. thick (*thicknesses recommended: Up to 4 ft. 0 in. long 1½ in. thick; from 4 ft. 0 in. to 6 ft. 0 in. long 1¾ in. thick; over 6 ft. 0 in. long 2 in. thick*), with nosing as detailed and of colors as approved later from samples to be submitted. (*If the non-slip diamonds are to be outlined with metal strip state so here.*)

These treads shall be delivered at the building in a finished state. They shall be set in cement mortar and when they occur on steel stairs, they shall be secured to the sub-tread by the Dovetail Anchor method in accordance with the details of the manufacturer, who shall provide all anchors and bolts as required. Drilling of steel sub-treads will be done by others.

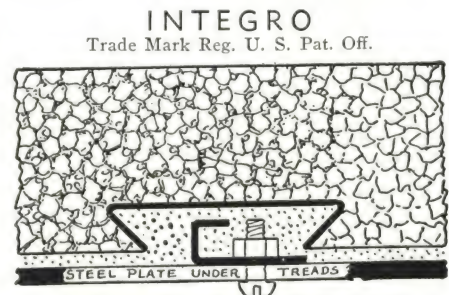
The treads shall be protected with boards and the entire work shall be delivered in perfect condition.



Stairway in New York Public Library, Fifth Avenue and 42nd Street



Types of Nosings



Dovetail Method of Installation

This method consists of placing a metal dovetail groove across the bottom of the tread at each end. Corresponding metal anchors are bolted to the steel sub-tread.

NORTON COMPANY

Alundum Rubber Bonded Safety Treads and Alundum Stair Tile WORCESTER, MASS.

NEW YORK

CHICAGO

DETROIT

PHILADELPHIA

CLEVELAND

PITTSBURGH

HARTFORD

LONDON, ENGLAND

NORTON COMPANY OF CANADA, LTD., HAMILTON, ONTARIO

For Alundum Tiles and Alundum Aggregates, See File Index

ALUNDUM RUBBER BONDED SAFETY TREADS

Description

Alundum Rubber Bonded Safety Treads are made of a hard, tough and somewhat flexible rubber base which is re-enforced with a ¼-in. galvanized wire mesh. Alundum Aggregate (ceramically bonded aluminum oxide abrasive) is securely anchored into the wearing surface of the rubber.

Features

Non-slip—Even on the nosing over which foot traffic pivots.

Continuous Safety*—Because it cannot wear smooth.

Level—To effectively guard against heel catching and tripping accidents.

Serviceable—It will give a building life of safe service in most cases.

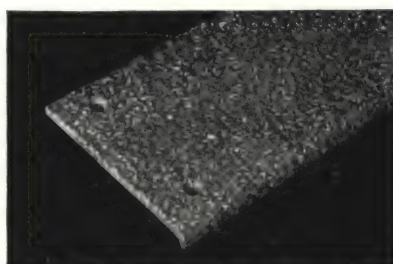
Economical—Because it prevents accidents and requires no maintenance.

Application—Made easily and quickly on all kinds of stairs.

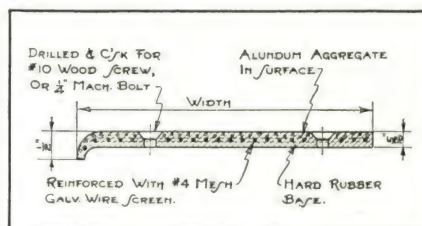
Comfortable—Sufficiently resilient and non-resonant to be quiet and comfortable.

Appearance—Entirely becoming to nearly every condition because available in black, red, buff and green colors which are permanent and are effectively kept neat by merely applying a damp cloth.

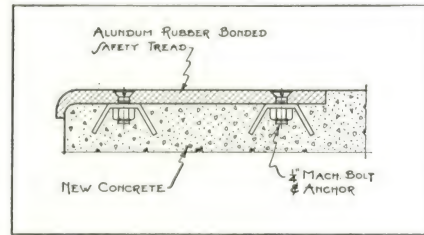
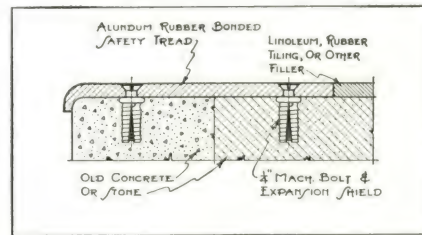
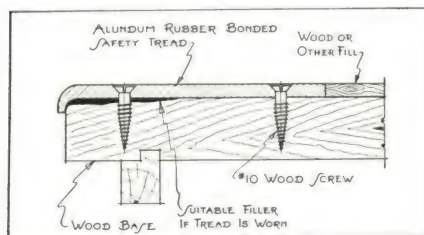
Uses—All kinds of stairs providing suitable structural support. Platforms



Alundum Rubber Bonded Safety Tread



Typical Installation Methods



ALUNDUM STAIR TILE

Alundum Stair Tile—Composed of Alundum abrasive (electrically fused aluminum oxide) ceramically bonded in high temperature kilns. It is made in standard tile sizes and in nine colors as listed below.

Permanently non-slip—wet or dry, because of the high percentage of Alundum abrasive used in the tile.

Exceptionally wear-resisting because of the hardness and toughness of Alundum abrasive.

Level surface free from heel catching or tripping hazards.

Quiet because of its non-resonant structure.

Guarantee

Alundum Tile is guaranteed against defects in material or workmanship; to retain its non-slip properties throughout its entire life if it is kept free from an accumulation of dirt or

ladders, ramps, around dangerous equipment, etc., in schools, stores, industry, hospitals, restaurants, public buildings, subways.

Conclusion—A greatly improved safety device which for the first time combines the maximum of safety for foot traffic and a new high standard of utility and economy into a dependable type of walkway service.

Liability Insurers—Approve Alundum Rubber Bonded Safety Tread.

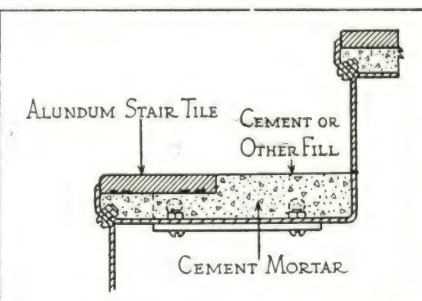
Specification—To assure this kind of protection for your clients reference to Alundum Rubber Bonded Safety Tread by name is suggested.

*Not a harsh surface early in its use which gradually loses its effectiveness, but a continuous, uniform, reliable form of protection all the time—free from variations in efficiency.

STANDARD SIZES

Widths	Lengths	No. Rows of Screw Holes	Spacing of Screw Holes
33 1/4"	Up to 6'6"	1 Row staggered	All sizes, 2" from ends; 1 1/2" from outer nosing up to 7 1/8" wide, 1" from back edge; over 7 1/8" wide, 1 1/2" from back edge. Holes 11" to 18" centers depending upon length of tread.
61 1/2"	Up to 6'6"	2 rows	
73 1/2"	Up to 6'6"	2 rows	
91 1/2"	Up to 6'6"	2 rows	
109 1/2"	Up to 6'6"	2 rows	
121 1/2"	Up to 6'6"	2 rows	

Many special sizes of treads can be furnished when necessary and treads can be drilled to meet special requirements.



other foreign substance; for a period of ten (10) years against wear resulting from foot traffic making replacement necessary.

Specifications

Catalog A giving full specification data on Alundum Stair Tile and showing how it may be installed on various types of stairways will be sent on request.

SIZES AND COLORS

Stair Tile		Colors	
6x4x 1/2 in.	6x 6x 3/4 in.	Brown	White-granite
6x4x 3/4 in.	7x 7x 5/8 in.	Buff	Green
6x6x 1/2 in.	9x 4x 3/4 in.	Gray	Tan
9x6x 3/4 in.	12x12x 1 1/4 in.	Blue-gray	Red
Stair sizes also made 1 and 1 1/4 in. thick			Black

Alundum Floor Tile for use on treads back of nosing and on platforms is available in same colors as Alundum Stair Tile and the following sizes: 3x3 in., 6x4 in., 6x6 in. and mosaic sizes 3/4 and 1 1/8 in. square, 2 1/4 x 1 1/8 in. oblong.

THE SAFETY PROCESSING CO.

"Saf-on" Safety Stair Tread

33 North Hazel Street, YOUNGSTOWN, OHIO

New York Corporation: SAFETY PROCESS CO., INC., 39 Cortlandt Street, New York, N. Y.

DISTRICT SALES OFFICES

ATLANTA, GA. BUFFALO, N. Y. CHICAGO, ILL. CLEVELAND, OHIO DALLAS, TEX. DENVER, COLO. INDIANAPOLIS, IND.
KANSAS CITY, MO. MILWAUKEE, WIS. PITTSBURGH, PA. ST. LOUIS, MO. TOLEDO, OHIO TULSA, OKLA.

THE "SAF-ON" PROCESS INSURES SAFETY AND LONG LIFE WITHOUT AFFECTING THE APPEARANCE

Description

The "Saf-on" Process has been invented particularly for use on marble, travertine and similar ornamental stairs and provides a degree of safety and permanency that has never before been approached. It is a process that makes every step safe by impregnating the marble or other material with a special substance known as "Saf-onite" which prevents slipping or sliding, sets up no hazardous obstruction, and increases visibility of the tread.

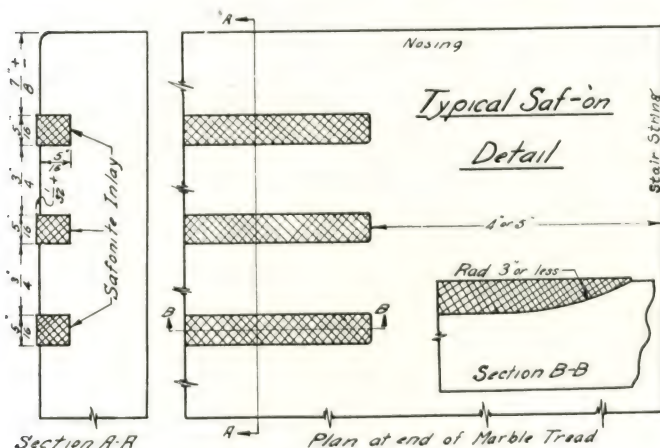
The "Saf-on" Process creates a condition of permanent safety. The embedded material is many times harder than the tread itself. It is so located that it carries the brunt of the traffic. This prevents wear and greatly increases life of the stairs.

It may be applied to new or to existing steps. Three grooves are cut near the nosing and parallel to it. These are then filled with "Saf-onite" as shown in the detailed drawing. On curved treads, by use of special machines, the grooves are cut to conform with the contour of the tread, thereby assuring perfect non-slip, visible safety from every angle without affecting the appearance of the tread.

Write for Descriptive Booklet.

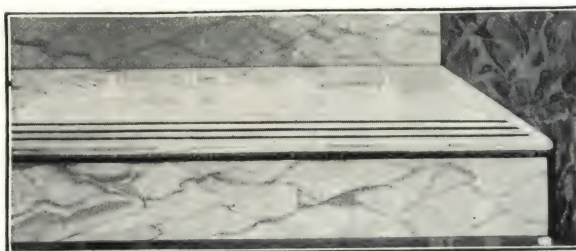
Applications

Especially for Stairs of Marble, Travertine or Terrazzo—The "Saf-on" Process is particularly desirable for stairs of marble or terrazzo but is just as advantageous for tile, wood and other materials whose smooth, slick surface creates a hazard.



Saf-on

TRADE-MARK
Reg. U. S. Pat. Off.



This Is a "Saf-on" Step

A "Saf-on" Step is provided with an unprecedented degree of safety. Beauty of the stairs is not destroyed. The impregnated "Saf-onite" protrudes above the surface a distance of only $\frac{3}{8}$ in. This material has abrasive properties that render a definite safeguard

Ramps, Vestibules, Sidewalks, and Elevator Thresholds—Beyond its use on staircases of every kind there are many other needs for the application of the "Saf-on" Process—such as ramps, vestibules, sidewalks, elevator thresholds, etc. It should be given serious consideration for any surface and location where experience and intelligent reasoning indicate the probability of falls from slipping.

Finest Workmanship Guaranteed

Work of applying "Saf-on" Process is conducted by craftsmen of highest ability who use our patented machines for grooving marble, terrazzo and other materials. This workmanship has been so highly perfected that there is no danger of steps being marred or

chipped in any manner. These workers are sent out only from district offices. We guarantee a finished job of finest character.

Specifications

Install treatment known as "Saf-on" in each tread and platform of all marble and (or) terrazzo stairs. This treatment to consist of providing three (3) grooves of proper width and depth near the nosing of each stair tread, platform and landing, as per detail, into which "Saf-onite" shall be applied in such a manner as to finish true and straight, slightly above the top surface of the tread and so as to form a safe non-slip surface. The "Saf-onite" when hardened shall adhere to the marble and become an integral part of the tread. This treatment to be installed by THE SAFETY PROCESS COMPANY, INC., 39 Cortlandt Street, New York, N. Y. [THE SAFETY PROCESSING CO., Youngstown, Ohio].

A special Specification, meeting Federal requirements and accepted by the Treasury Department will be furnished on request.



Here Is an Actual Illustration of How the Outstanding New Buildings Are Adopting Saf-On Protection

THE SAFE TREAD CO., INC.

Manufacturers of "Safe Tread" Products

TELEPHONE
Cortland 7-8863

220 Broadway, NEW YORK, N. Y.

Products

"SAFE TREAD" ABRASIVE METAL for Stair Treads and Platforms, including Spirals, Floor Plates, Door Saddles, Trench Covers, Expansion Plates, etc.

"Muck Safe Tread," a self cleaning, non-slip tread effective under grease, oil, mud, dust and similar dirty conditions. (See page 3.)

"Duoplane Safe Tread," a non-slip tread for extra heavy traffic, providing double the normal wear of standard abrasive metals. (See page 3.)

"SAFE TREAD" PLASTIC FUT-SURE for slipproofing and refinishing new or old floors of wood, iron, steel, terrazzo, and stone. (See page 3.)

"SAFE TREAD" ABRASIVE GRAINS for incorporating or embedding in new cement and composition floors to add durability and to prevent slipping. (See page 3.)

An Experienced Organization

THE SAFE TREAD CO., INC., is headed by a man who pioneered in the design and production of abrasive metals for structural

purposes and who, for 25 years, has been a recognized authority on problems of walkway safety.

Associated with him are engineers, practical foundrymen and thoroughly experienced specialists in their respective fields. With a background of such sound experience and practical knowledge "Safe Tread" products may be specified safely by the architect and ordered with full assurance that they will provide the best available anti-slip tread in such forms as may be desired.

Facilities

"Safe Tread" Abrasive Metals are manufactured in a modern plant with facilities for the production of 80 tons per day, thus assuring prompt handling of the largest size orders. Other "Safe Tread" products are produced exclusively for us in nationally-known plants by modern scientific methods—each of the best materials available for the specific purpose.

Consultations on walkway safety problems and tentative quotations on preliminary estimates furnished without obligation.

"SAFE TREAD"—AN IMPROVED ABRASIVE METAL

Cast of Iron, Bronze, Aluminum or other Alloys and Abrasive

For Stair Treads, Floor Plates, Door Saddles, Platforms, Etc.

[LISTED BY UNDERWRITERS' LABORATORIES RE-EXAMINATION SERVICE]

Description

"Safe Tread" Abrasive Metals are made with a wearing or tread surface of best grade new abrasive grains (manufactured corundum) embedded uniformly in the wearing surface at the time of casting.

The "Safe Tread" Process

"Safe Tread" Abrasive Metal is made by a patented process which produces anti-slip treads having the diamond-hard abrasive:

(1) Deeply embedded in and firmly held by the metal *without an intervening film of foreign material* to weaken the grip of the metal on the abrasive. (When the abrasive grains are sprayed or coated with a foreign substance to prevent washing or floating as the molten metal enters the mold, the metal cannot make intimate contact with them—a condition that clearly affects the durability of the tread.)

(2) Projecting slightly to give a safe footing under all conditions. (Unless the grains project slightly above the metal to give the necessary "bite" the surface is no more anti-slip than metal without any abrasive); and

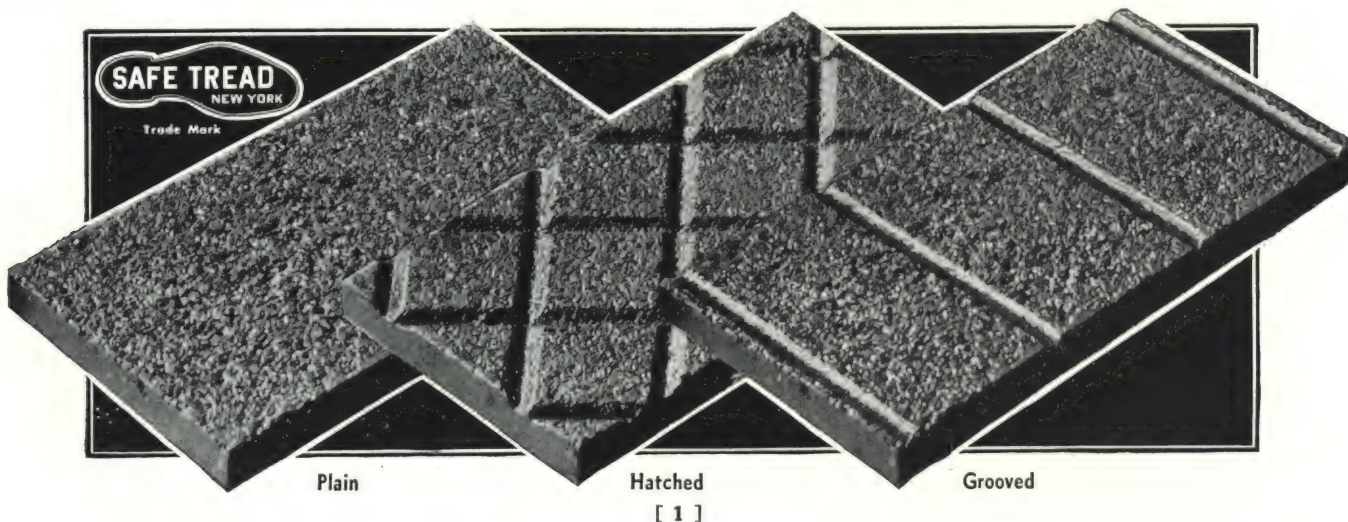
(3) Closely distributed in the surface so that the metal is protected from wear.

Scope of Use

"Safe Tread" Abrasive Metals are suitable for *inside or outside*—wherever slipping is to be prevented or excessive wear withstood, in either new or repair work. It has met the most exacting requirements and has been furnished for over 2,000 outstanding projects during the past four years; by direct purchase under the rigid inspection of the U. S. Navy; on contracts for public buildings, including postoffices, hospitals, schools, etc., and for private work including office buildings, stores, churches, dairies, packing houses, factories, subways, etc.

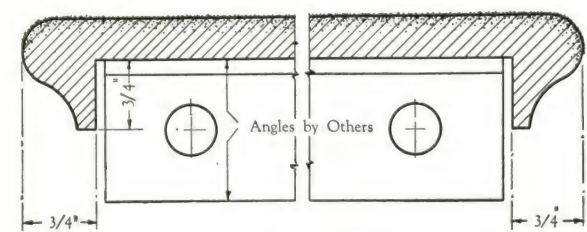
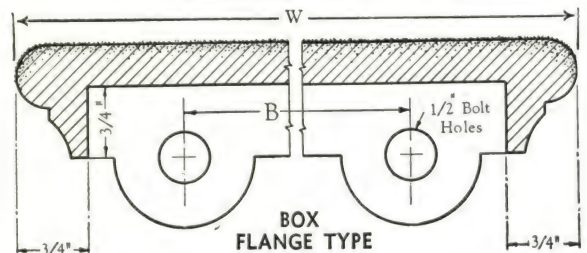
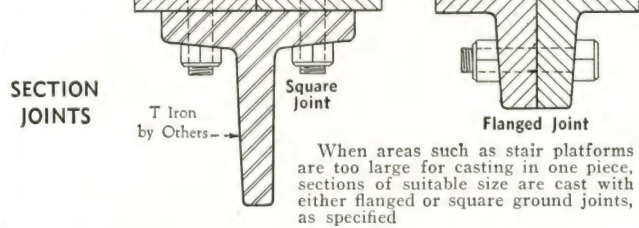
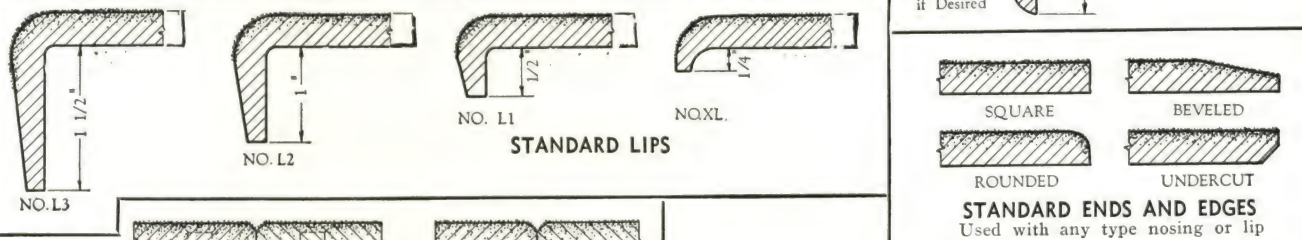
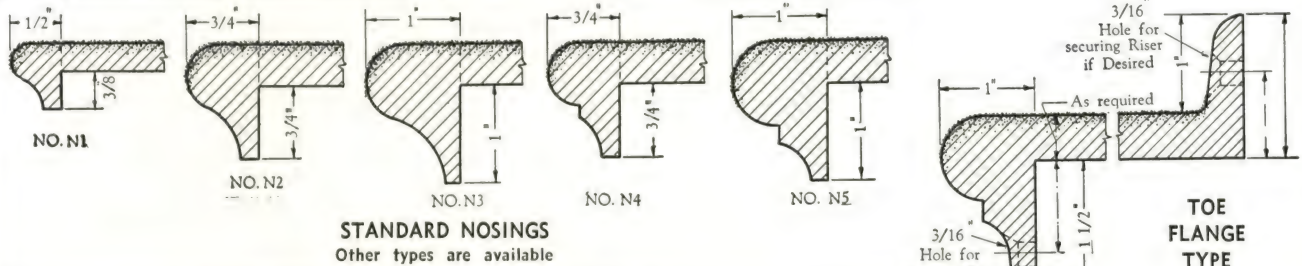
Specifying and Ordering

When specifying "Safe Tread" Abrasive Metals, the kind of metal, surface design, thickness and form desired should be indicated. When ordering or requesting estimates complete information should be furnished. Detail drawings by the architect or shop drawings by the ornamental iron worker assure closer estimates and accurate filling of orders.

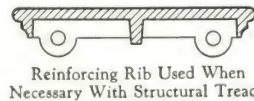


TYPICAL DETAILS OF "SAFE TREAD" FORMS

The following details are suggestive of the many forms in which "Safe Tread" Abrasive Metals are available. They can be cast in practically any form to meet specific requirements. Minimum thickness: $\frac{1}{8}$ in. for Iron; $\frac{1}{4}$ in. for Bronze and Aluminum.

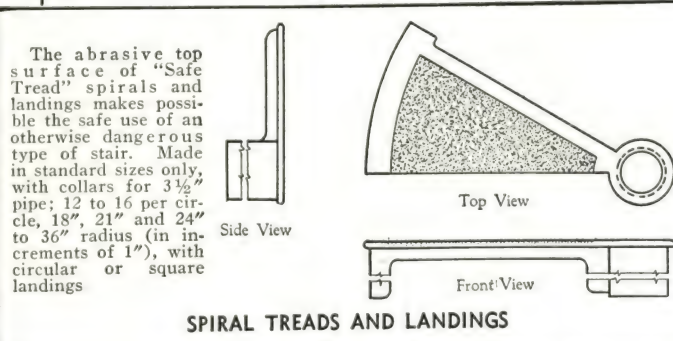
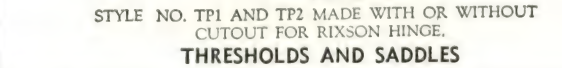
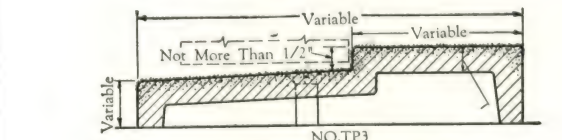
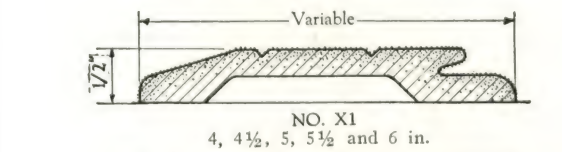
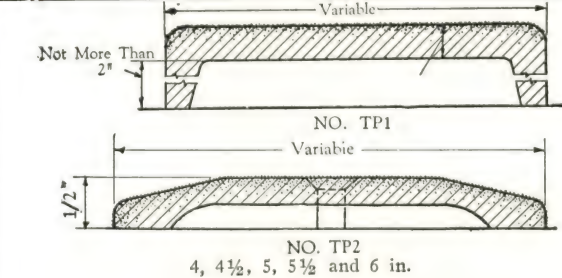
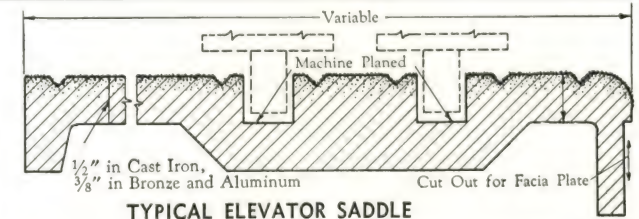


The usual supports for ends of structural stair treads are angles fabricated with the iron work. When desired, treads with end lugs or box flanges are cast as part of tread, in which case holes for $\frac{1}{2}$ " bolts are cored on standard spacing shown below:



STANDARD SPACING (INCHES)

W	5	6	7	8	9	10
B	2	3	3 1/2	4	5	6



NEW TYPES "SAFE TREAD" ABRASIVE METALS

(Standard Types Furnished Unless These Types Are Specified)

"Muck Safe Tread"

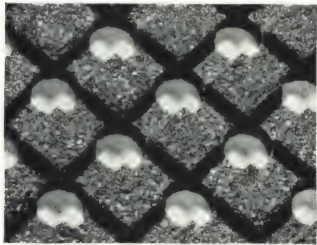
(Patent Pending)

A non-slip tread of great durability and effectiveness, that will not "clog up" under grease, oil, mud, dust, etc. "Muck Safe Tread" has been developed through the combined efforts of Safety Engineers in the oil industry and THE SAFE TREAD CO., INC.

Features—(1) Diamond-hard abrasive surface is actually non-slip and extremely resistant to wear.

(2) Deep, wide, cross-hatched grooves take dirt and muck that would otherwise clog up walking surface.

(3) Cross-hatched grooves extending to edges facilitate cleaning.

**"Muck Safe Tread"**

(4) Large holes at groove intersection make treads actually self-cleaning when supported on angle irons or grating; or as a self-supporting "structural" tread.

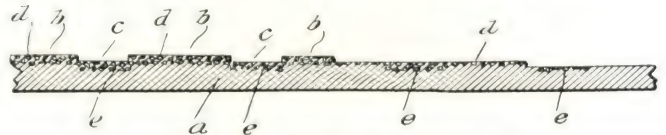
(5) Made of cast iron with aluminum oxide abrasive grains embedded in wearing surface, tread is not susceptible to corrosive action of weather or acid fumes.

"Duoplane Safe Tread"

(Patent Pending)

Embodies a new principle of providing an upper or initial contact plane composed of the tops of squares (*b.b.*) about $\frac{3}{4} \times \frac{3}{4}$ in. separated by rectangular section valleys about $\frac{1}{8}$ in. deep and $\frac{3}{4}$ in. wide.

Abrasive grains (*d.d.* and *e.e.*) are embedded, at the time of casting, in both the squares and bottoms of the valleys to a depth of about $\frac{3}{8}$ in. in each. When the elevations are worn down, contact begins on the surfaces at the bottoms of the valleys. (In standard abrasive-metal there is only one wearing plane thickness of abrasive.) This type is especially desirable for maximum durability and effectiveness.

**"Duoplane Safe Tread"**

Cross Section of "Duoplane Safe Tread"

"SAFE TREAD" PLASTIC FUT-SURE

(The "Plastic Fut-Sure" of the General Abrasive Co., Inc., of Niagara Falls, N. Y., for which The Safe Tread Co., Inc., is National Distributor)

A specially compounded abrasive and air-drying material for trowel application to floors of wood, iron, steel, concrete, terrazzo and stone. Economical and effective for durable, attractive, slip-proof floors for ramps, hallways, building entrances, around pavement skylights, stores, hospitals, floors around light machinery—*wherever slippery floors are apt to cause accidents.*

Colors—Natural Shade (Dark Brown), Gray, Green, Red.



Easy to Apply

Advantages—(1) Uniformly distributed abrasive.

(2) Unaffected by oils or greases.

(3) Has high dielectric strength.

(4) Withstands extremes of temperature.

(5) Unaffected by ordinary cleaners.

(6) Ready for service in 24 hours.

(7) Shipped to job ready to apply.

How Packed—100 and 50-lb. drums and 10-lb. cans. Sufficient primer is included with every shipment of surfacing material.

Sample Panels—On request.

"SAFE TREAD" ABRASIVE GRAINS

For incorporating or embedding in new cement and composition floors to add durability and to prevent slipping

**Description**

Solid crystalline aluminum oxide grains, made in arc type electric furnaces at Niagara Falls, are supplied in specified sizes to meet all conditions of service. When embedded in granolithic and terrazzo floors they produce a slip-proof surface and add to the durability and wear-resistance of the floor.

They are recommended for use in building entrances, railway stations, ramps and other surfaces where safety and durability are important considerations.

Application

For Heavy Duty Floors—Finish coat $\frac{1}{2}$ to 1 in. thick, using a regular 1:2 mix, should be:

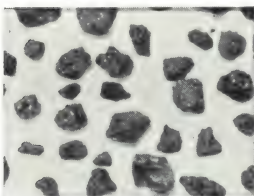
4 parts cement, 1 part Abrasive Grains, 7 parts sand.

For Light Duty Floors—The Abrasive Grains should be evenly sifted over the surface of the finish coat (about $\frac{1}{2}$ lb. per sq. ft.) and trowelled in.

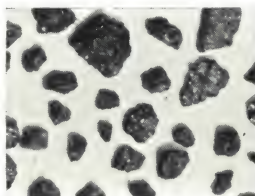
How Furnished

"Safe Tread" Abrasive Grains are furnished in kegs or bags. Minimum order 100 lbs.

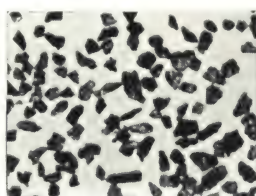
Prices and samples on application.

**"Safe Tread" Abrasive Grain and Step Inserts in New York Subway Stations**

Size No. 1—3 to 8 Mesh



Size No. 2—6 to 12 Mesh



Size No. 3—12 to 30 Mesh

WOOSTER PRODUCTS INC.

SUCCESSORS TO THE SAFETY STAIR TREAD COMPANY

Wooster Safe-Groove Stair Treads—Wooster Abrasive Cast Treads and Sills
Wooster Security Nosings—Wooster Security Edgings

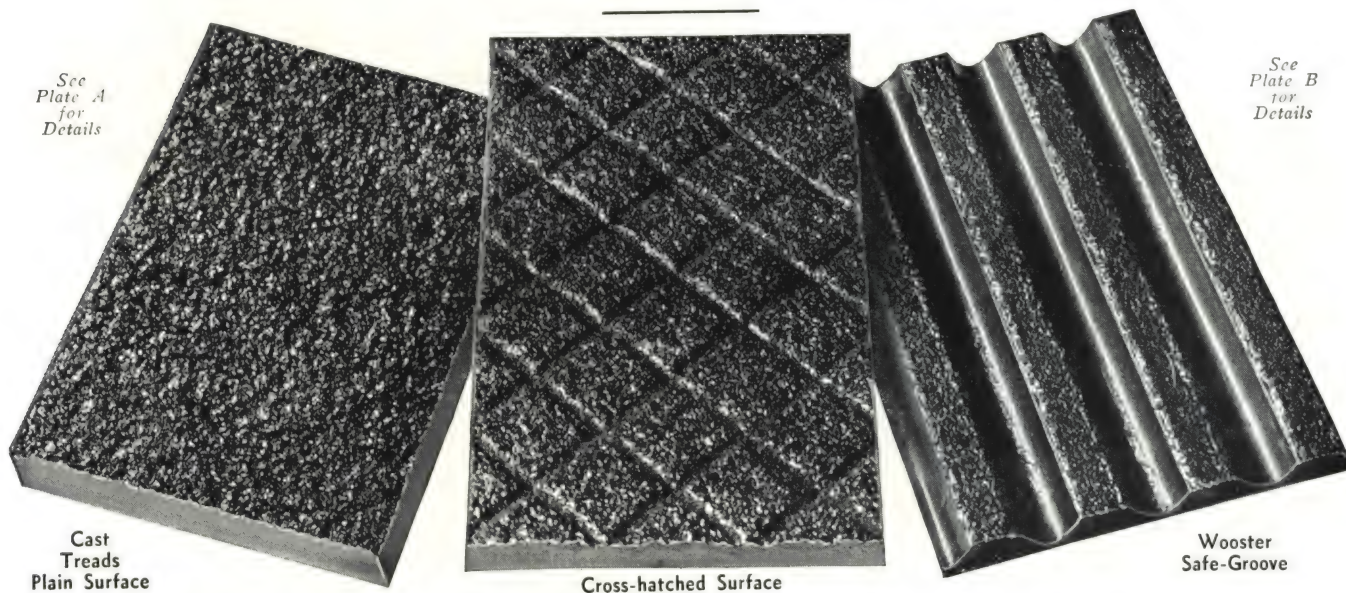
WOOSTER, OHIO

NEW YORK OFFICE, 101 Park Avenue

CHICAGO OFFICE, 324 W. Washington Street

REPRESENTATIVES IN PRINCIPAL CITIES

For Wooster Metal Wall Trim, see File Index



Wooster Abrasive Cast Treads and Sills

Ferrogrit—Cast iron with anti-slip abrasive surface.

Alumogrit—Cast aluminum with anti-slip abrasive surface.

Bronzogrit—Cast bronze with anti-slip abrasive surface.

Nicklogrit—Cast nickel bronze with anti-slip abrasive surface.

Description—Wooster Anti-Slip Abrasive Cast Treads and Sills are produced by exclusive, patented casting methods. The abrasive grits (aluminous oxides) deeply impregnated into the surface at the time of casting produce an improved anti-slip abrasive walking surface. Abrasive surfaced elevator saddles, floor plates, thresholds, are made in any of the above mentioned metals. See Plate A for various types of construction, self-supporting (with or without risers) and superimposed on other materials.

Wooster Safe-Groove Treads

Wooster Safe-Groove Treads are made of solid metal having deep, narrow grooves, alternating with broad ribs of wear-resisting anti-slip material. They are scientifically designed and proportioned to provide just the proper amount of anti-slip efficiency and utmost resistance to wear. The anti-slip ribs extend clear to the bottom of the tread, insuring safety until the tread is worn out. See Plate B.

Wooster Safe-Groove Treads are made in Steel, Yellow Brass or White Alloy with anti-slip ribs of either abrasive grits or lead.

Wooster Security Nosings and Edgings

Wooster Security Nosings, on stairs, protect linoleum, rubber tile, asphalt tile, cork tile, composition and similar floor cov-

erings from wear and destructive action of foot traffic concentrated at edges. Increasing popularity of linoleum and similar materials as coverings for table, desk, counter and sink tops, etc., has brought Wooster Security Nosings into use as a highly essential protective and ultra modern decorative accessory for this class of work.

Wooster Security Edgings provide protection for floor coverings on flat surfaces at doorways, edges of runners, etc., where exposed edges are subjected to hard wear. Wooster Reversible Edging is especially designed for applying linoleum and similar materials to desk and table tops, while Wooster Drip-proof Edging is used on kitchen tables, cabinets, restaurant counters, etc.

Feather Edge Flange—Wooster Nosing and Edging sections are made of Solid Extruded Yellow Brass or White Alloy (a specially strong heat-treated aluminum alloy) sufficiently heavy to withstand rough usage without denting. All sections are made with the *Feather Edge Flange* (a patented Wooster feature) which eliminates "building up" back of the flange, or rabbeting of material. It expedites and reduces costs of installation. Because of their design, Wooster Nosings and Edgings are unusually amenable to curving, our special facilities enable us to produce unusually small radius curves. All small radius curves made to specifications.

Lengths and Finishes—Furnished either cut to required lengths or 12 ft. stock lengths with countersunk screwholes. Available in Matte, Brushed, Satin or High-luster Woosterlite finishes. Details on Plate B.

Representative Installations

Colleges

University of Texas (Library) Austin, Tex.
Oberlin College, Oberlin, Ohio
Pacific University, Forest Grove, Ore.
Dillard University, New Orleans, La.

Schools

Board of Education, Administration Bldg., Louisville, Ky.
Park City Lowery School, Knoxville, Tenn.
Mound Fort School, Ogden, Utah
Geo. H. Nichols School, Endicott, N. Y.

Hospitals

Ft. Sam Houston Hospital, Ft. Sam Houston, Tex.
Biggs Memorial Hospital, Ithaca, N. Y.
Charity Hospital, New Orleans, La.

Industrial

Chicago Pneumatic Tool Co., Cleveland, Ohio
West Penn Electric Co., Pittsburgh, Pa.
Western States Envelope Co., Milwaukee, Wis.
Cudaly Packing Co., Omaha, Neb.

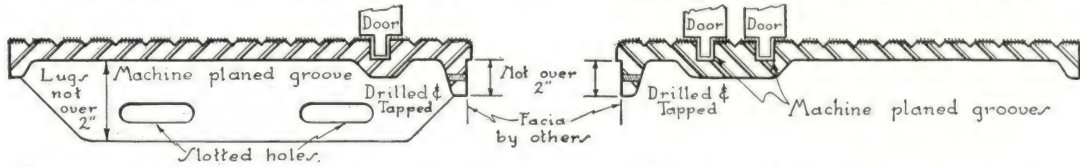
Federal Buildings

Albrook Field, Canal Zone
Post Office, Waynesboro, Pa.
Officers Quarters, Ft. Monmouth, N. J.
Department of Justice Bldg., Washington, D. C.
Company Barracks, Fort Crook, Neb.
U. S. Inspection Station, High Gate Springs, Va.
Post Office, Eau Claire, Wis.
Officers' Quarters, France Field, Canal Zone

Marine

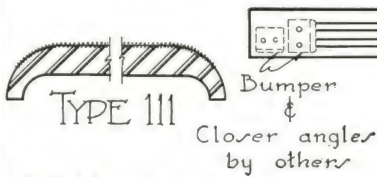
Pacific Steamship Co., Terminal Bldg., Seattle, Wash.
U.S.S. Cushing, Puget Sound, Wash.
U.S.S. Perkins, Puget Sound, Wash.
U.S.S. Case, Boston, Mass.
U.S.S. Conyngham, Boston, Mass.
U.S.S. Cassin, Philadelphia, Pa.
U.S.S. Shaw, Philadelphia, Pa.
U.S.S. Tucker, Norfolk, Va.
U.S.S. Downes, Norfolk, Va.
U.S.S. Smith, Mare Island, Calif.
U.S.S. Preston, Mare Island, Calif.
Coast Guard Cutter, Northland, Oakland, Calif.

FERROGRIT ~ BRONZOGRIT ~ ALUMOGRIT ~ NICKLOGRIT



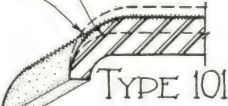
TYPE 401 (with cast lugs)

TYPE 401 (without lugs)



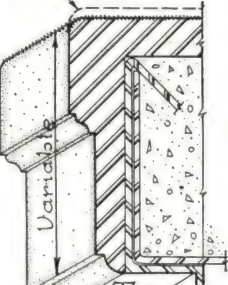
TYPE 111

Dotted lines show $\frac{1}{2}$ & $\frac{3}{16}$ thicknesses



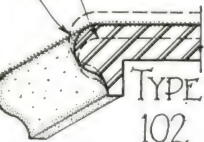
TYPE 101

Dotted line shows $\frac{1}{2}$ thickness



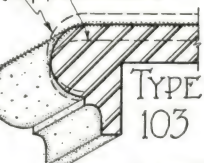
TYPE 101-A

Dotted lines show $\frac{1}{2}$ & $\frac{3}{16}$ thicknesses

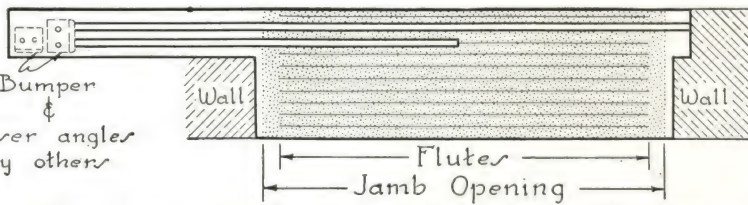


TYPE 102

Dotted lines show $\frac{1}{2}$ & $\frac{3}{16}$ thicknesses

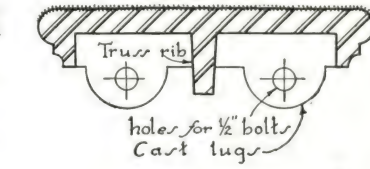


TYPE 103

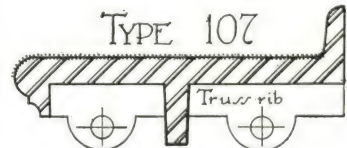


TYPE 106

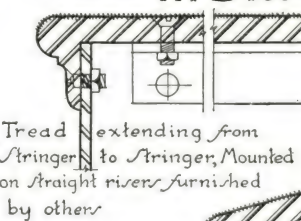
TYPE 108



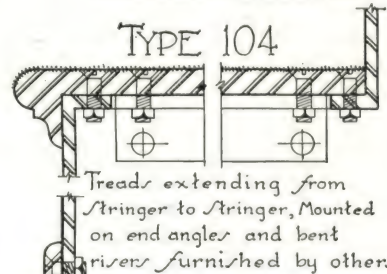
TYPE 107



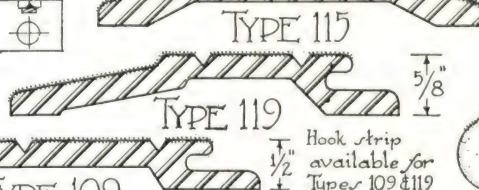
TYPE 105



TYPE 109



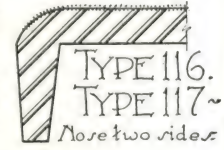
TYPE 104



TYPE 115

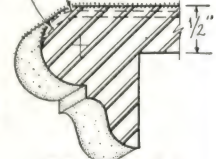
TYPE 119

Hook strip available for Type 109 & 119



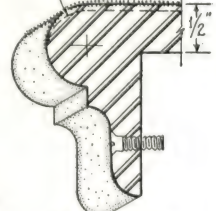
TYPE 116.
TYPE 117~

Dotted lines show $\frac{3}{16}$ & $\frac{1}{2}$ thicknesses



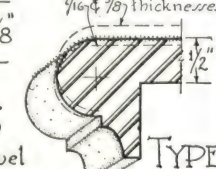
TYPE 104

Dotted line shows $\frac{3}{16}$ thickness

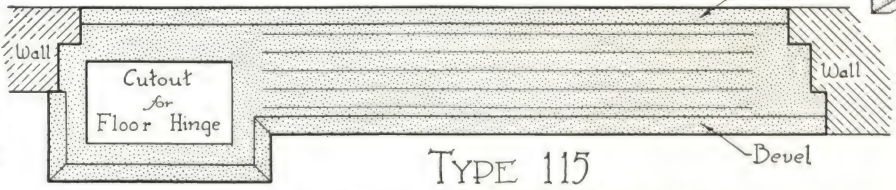


TYPE 105

Dotted lines show $\frac{3}{16}$ & $\frac{1}{2}$ thicknesses



TYPE 106-107
& 108



TYPE 115

One Rixson or Shelby Style Cutout



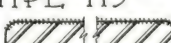
TYPE 115 ~ With Two Rixson or Shelby Style

Bevel. Cutouts Patent

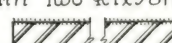
Nº 1920244



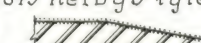
TYPE 110 Two Radius Edges
TYPE 120 One Radius Edge



TYPE 121



TYPE 100



Bevel Back or Ends

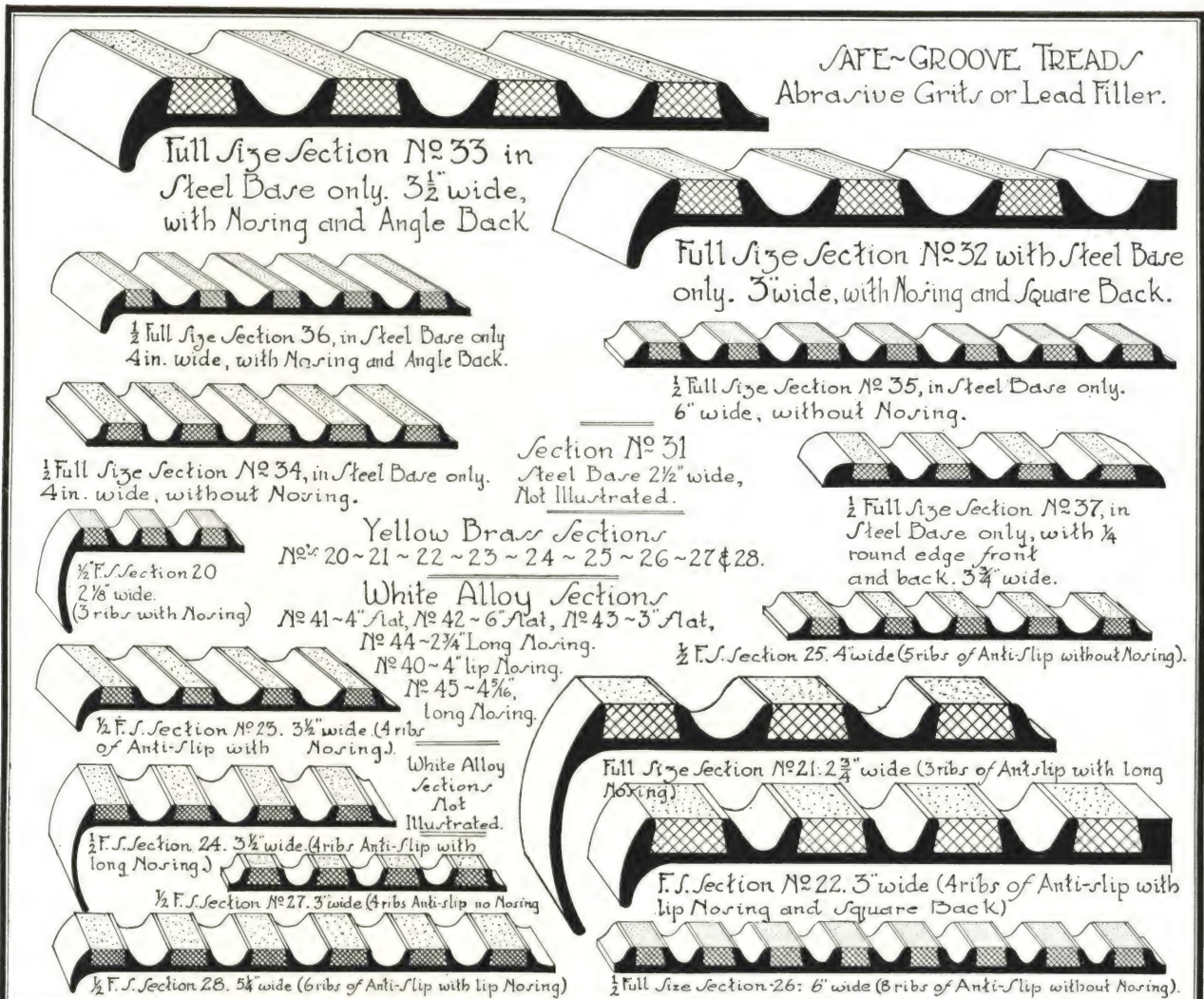
Other Patents Pending

ABRASIVE CAST
TREADS & SADDLES

WOOSTER PRODUCTS INC. WOOSTER, OHIO.

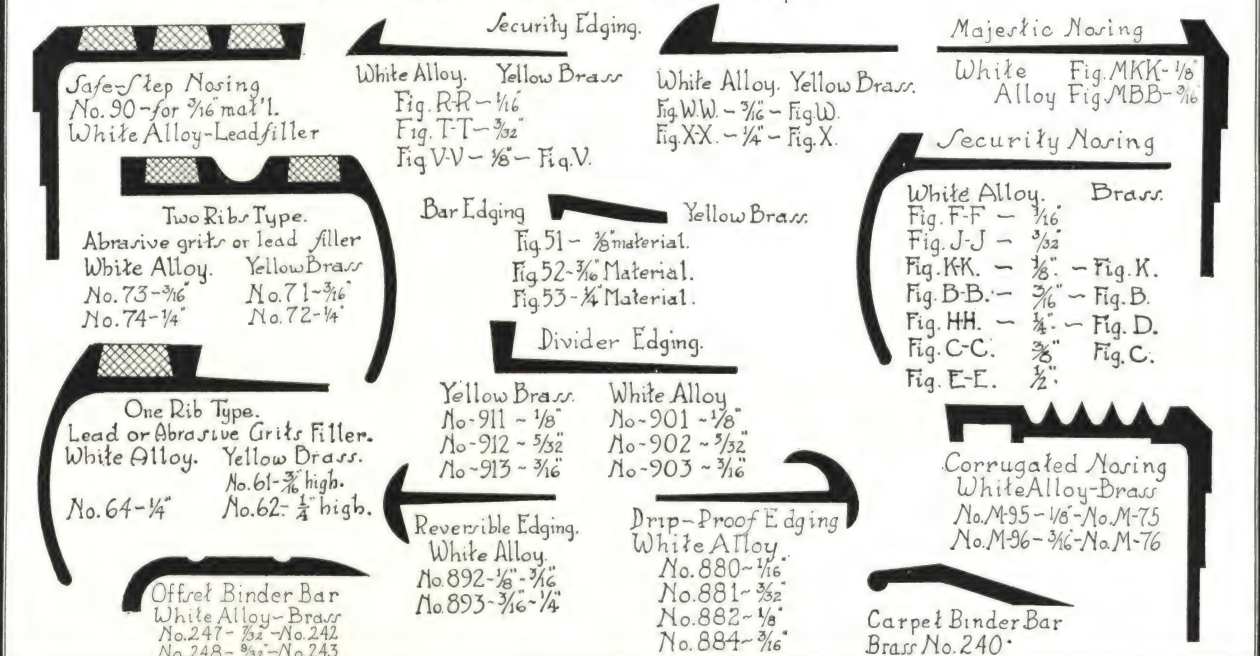
DATE A.

Printed in U.S.A.



WOOSTER SECURITY NOSINGS & EDGINGS

Pat. Re. 17205



SAFETY TREADS
NOSINGS & EDGINGS

WOOSTER PRODUCTS INC. WOOSTER OHIO.

DATE B.

UNIVERSAL SAFETY TREAD, INC.

111 Perry Street
LOWELL, MASS.

Products

UNIVERSAL ANTI-SLIP METAL STAIR TREAD (Abrasive) Type I.

UNIVERSAL SAFETY STAIR TREAD (Steel, Brass, Aluminum, or Stainless Steel Base, Lead Filled) Type II

UNIVERSAL BRASS OR ALUMINUM STAIR NOSINGS.

UNIVERSAL STEEL OR BRASS DOOR SADDLES.

Universal Anti-Slip Metal Tread, Type I

Universal Anti-Slip Metal Tread is suitable for new construction or repair work. It consists of a tinned steel baseplate to which is attached the hardest known abrasive grain (Al_2O_3) with a hard lead binder. These diamond-hard grains are embedded throughout the entire thickness of the tread to the baseplate and not only make the tread slip-proof for its entire life, but prevent

the foot from being exposed to any slippery surface. The lead, which is a recognized non-slip metal, makes a very effective binder. Suitable sub-treads or support should be provided for the safety tread to rest upon. Universal Anti-Slip Metal Tread will positively stand up under the most severe service as proven by long and exclusive use in the Philadelphia subways.

It is *fireproof*, *scuffproof*, *non-porous*, *noiseless*, neat in appearance and affords positive immunity from slipping. Anti-slip treads can be furnished in flat or corrugated surface to meet specified requirements.

Sizes—Universal Anti-Slip Tread, Type I, is supplied in any width up to 8 in. and in any specified length up to 10 ft. either with or without reinforced or lip nosing and back edges square or beveled.

Standard thickness, $\frac{1}{4}$ in.

THE SUPER QUALITY SAFETY TREAD—ECONOMY THROUGH SAFE DURABILITY

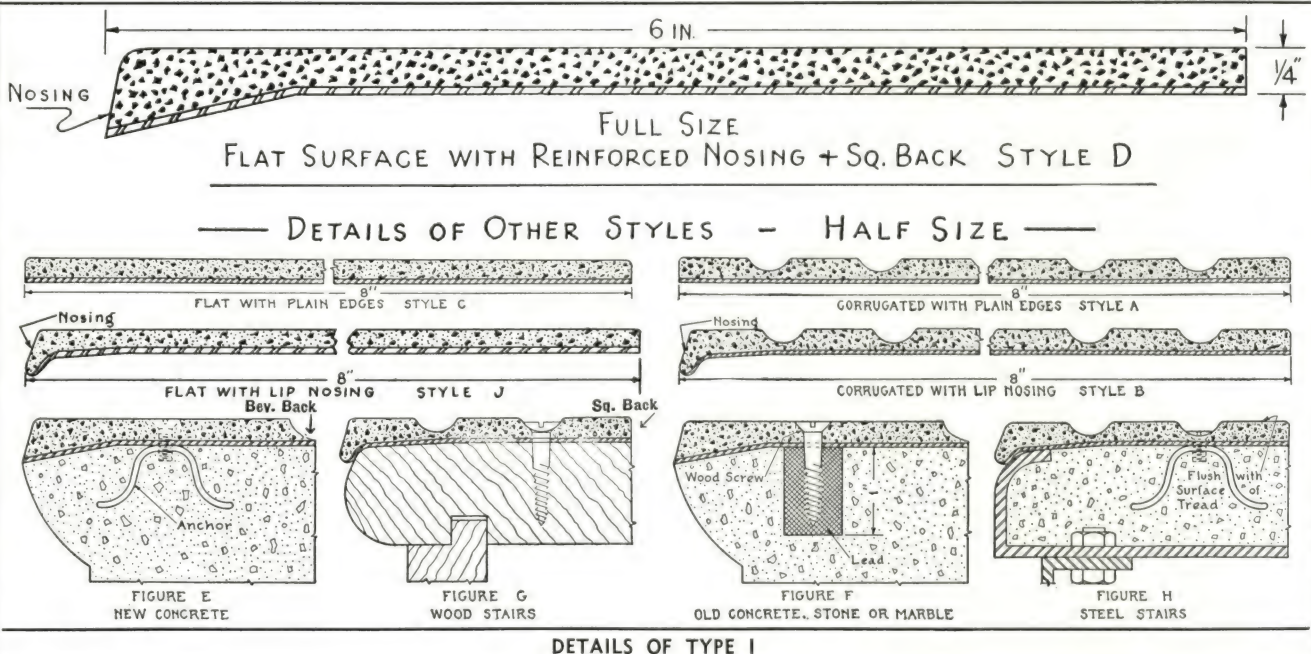
NON-CORROSIVE

FURNISHED UNPAINTED



Type I
Flat Style D, with
Reinforced Nosing

Enlargement to show positive impregnation of abrasive $\frac{3}{8}$ in. deep with hard lead binder making a solid mass.



Universal Safety Tread, Type II

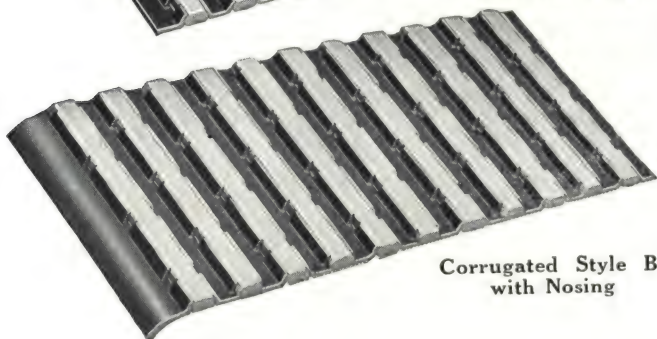
Universal Safety Tread, Type II, is constructed of a steel, brass, aluminum or stainless steel baseplate, punched to receive non-slip lead wires which are rolled in and firmly clamped. The lead fills the perforations and a non-slip surface is presented for its full thickness. There are no continuous metal ribs on the outer edge, which is the danger point on all stairs, but the lead, being exposed between the metal teeth, presents a non-slip edge at all times. This is especially important in descending stairways. A minimum of hard supporting metal and the maximum of non-slip lead form the wearing surface.

The baseplate can be extended to form a nosing of any depth required which is especially desirable where evidences of repair are to be covered. We can furnish alloy-coated, galvanized steel or stainless steel to resist the action of salt water or dampness. The advantages of Universal Stainless Steel Safety Tread are most obvious, combining the utmost in lasting appearance with durability. Our brass treads are also recommended where it is necessary to have a rustproof and safe surface. Suitable sub-tread or support should be provided for the safety tread to rest upon.

Sizes—Universal Safety Tread, Type II, can be furnished in almost any width up to 12 ins. and in any specified lengths, either with or without nosing according to the requirements of the stairs or landings.

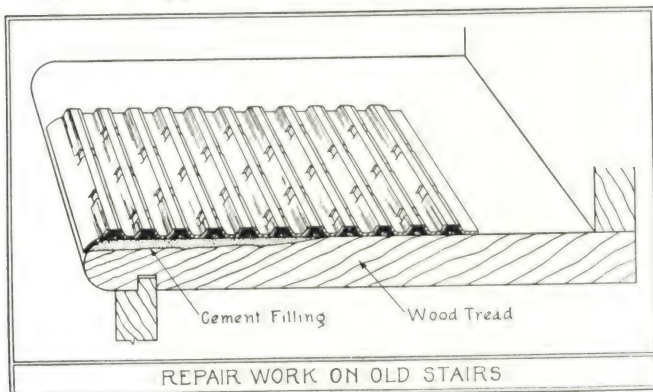


Corrugated Style A,
with Plain Edge



Corrugated Style B,
with Nosing

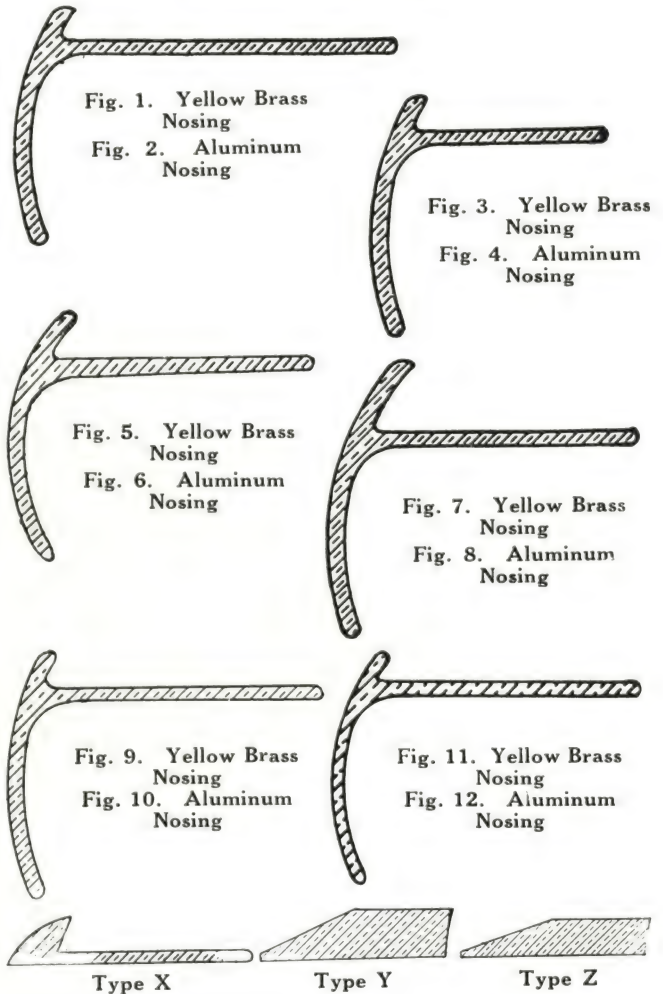
Detail Suggestion for Repair of Worn Stairs



Universal Brass and Aluminum Nosings

Universal Nosings are made of highly polished yellow brass and silvery white heat-treated aluminum and are designed to safeguard the front edge of steps and platforms when used in combination with other floor coverings. Furnished in any lengths up to 12 ft.

Styles of Universal Brass and Aluminum Nosings Details—Full Size



Universal Door Saddles

Furnished cut to length, drilled and countersunk.



Universal Brass Door Saddle, Corrugated

BRASS—CORRUGATED SURFACE

Width, in.	Height, in.
4	1/2
5	1/2
6	1/2

ROLLED STEEL—CORRUGATED SURFACE ONLY

Width, in.	Height, in.
4	1/2
5 3/8	5/8
7	5/8

AMERICAN ABRASIVE METALS CO.

IRVINGTON, NEW JERSEY

NEW YORK OFFICE: 50 CHURCH STREET

National Distributors for

RELiance STEEL PRODUCTS COMPANY

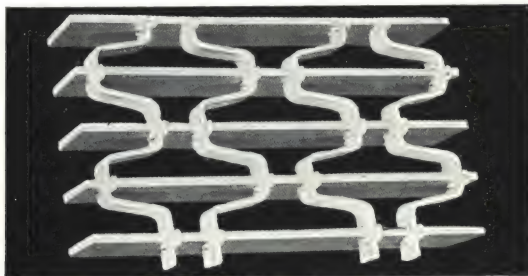
RANKIN (PITTSBURGH), PA.

RELiance ELECTRO-PRESSURE WELDED GRATINGS, TREADS AND ARMORING

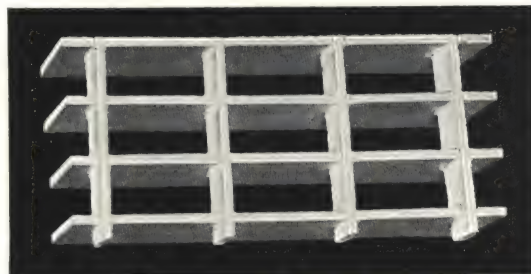
Grating

It is a positive *one-piece* structure. In the RELiance welding process, it is impossible for the joints to loosen, because after the metals have been fused under 1000 to 6000 amperes the 60,000-lb. pressure per cross bar is continued over cold metal to insure positive welds and homogeneous structure—the deep cross bars act as cross braces and insure maximum distribution. This is im-

portant as every piece of grating is subject to a concentrated load in one form or another. The negative moment is properly taken care of when used as a continuous flooring over three or more supports. There are no acute angles at the joints. This insures maximum ventilation and eliminates the accumulation of dirt in the corners. During 1935 nearly 400,000 square feet of reliance gratings, flooring and treads were sold.



Diagonal—"D" Type



Rectangular—"R" Type

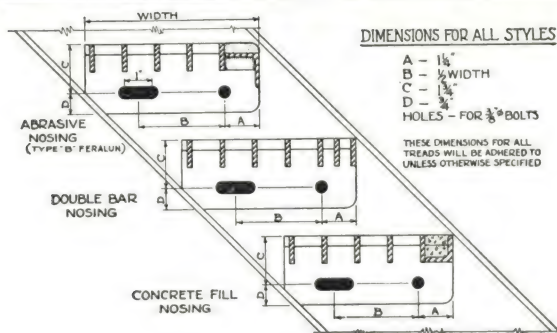
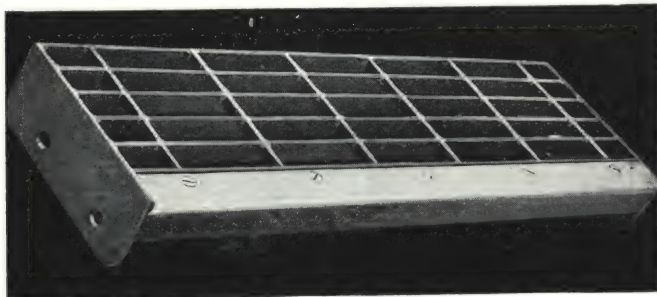
Reliance Armoring

An entirely new design which offers a strong and economical method for floor protection. Send us your problems. Our Engineering Department will cheerfully make definite recommendation.

Reliance Stair Treads

The same superior features of Reliance Electro-Pressure Welded Gratings are available in Reliance Stair Treads. The scientific spacing of cross bars and the fusion formed by the electro-welding process act as non-skid safeguards.

Visible Anti-slip Nosing—The Reliance Stair Tread is the only grating tread manufactured with Alumalun or Feralun abrasive anti-slip nosing—a real anti-slip design in which the edge of each step stands out most clearly. Other designs in Reliance Stair Treads are also available.



SAFE-LOAD AND DEFLECTION TABLE FOR GRATING (Rectangular Design)

For maximum fiber stress of 16,000 lbs. per sq. in.

Size of bearing bar (1" apart), in.		2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	8'-0"	9'-0"
3/4 x 3/16	P	500	320	217										
	D	.085	.134	.192										
	W	500	400	325										
1 x 3/16	P	900	725	600	500	450								
	D	.051	.080	.115	.156	.205								
	W	900	580	400	286	225								
1 1/4 x 3/16	P	1425	1125	950	800	700	625	550	500					
	D	.041	.064	.092	.125	.163	.207	.256	.310					
	W	1425	900	633	457	350	278	220	182					
1 1/2 x 3/16	P	2050	1650	1375	1175	1025	900	825	750	675	625	575		
	D	.034	.053	.077	.104	.137	.173	.214	.259	.308	.361	.418		
	W	2050	1320	917	672	512	400	330	273	225	192	164		
1 3/4 x 3/16	P	2800	2225	1860	1600	1400	1225	1100	1000	925	850	800	700	600
	D	.029	.046	.066	.090	.117	.148	.183	.221	.268	.308	.358	.468	.593
	W	2800	1780	1230	915	700	544	440	364	308	262	228	175	133
2 x 3/16	P	3650	2925	2425	2100	1825	1625	1450	1325	1200	1125	1025	900	800
	D	.026	.040	.057	.078	.102	.129	.160	.193	.230	.269	.314	.409	.518
	W	3650	2340	1618	1200	912	723	580	482	400	346	293	225	178
2 1/4 x 3/16	P	4650	3700	3100	2650	2300	2050	1850	1675	1550	1425	1325	1150	1025
	D	.023	.035	.051	.070	.091	.115	.142	.172	.204	.240	.279	.364	.460
	W	4650	2960	2065	1515	1150	912	740	608	516	438	379	288	228

We guarantee that for the same metal and the same size bars, Reliance Grating will have at least as much carrying capacity and no more deflection than any other grating on the market.

The above tables are extremely conservative when applied to Reliance Electro-Pressure Welded Grating.

For other gratings or spacings, our Engineers will promptly supply safe load tables, upon request.

Maximum lengths 40 ft. Maximum width 5 ft. Standard widths 2 ft. Reliance Engineers will recommend specific widths for specific jobs.

HENDRICK MANUFACTURING COMPANY

Mitco Open Steel Flooring, Armorgrids and Shur-Site Treads
57 Dundaff Street, CARBONDALE, PA.

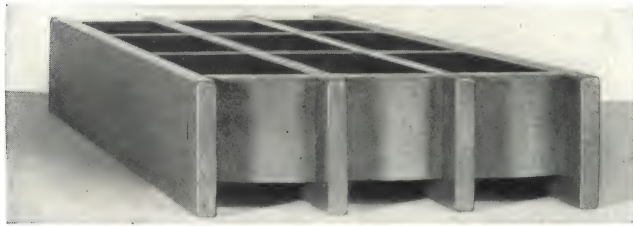
SALES OFFICES IN PRINCIPAL CITIES—CONSULT TELEPHONE DIRECTORY

Products

MITCO OPEN STEEL FLOORING, MITCO ARMORGRIDS and MITCO SHUR-SITE TREADS.

Also Perforated Metals, Perforated Metal Screens, Elevator Buckets, Testing Screens, Sheet Metal Work, Stacks, Tanks, Breechings and other light and heavy steel plate construction in all methods and all metals. For our Perforated Grilles, see File Index.

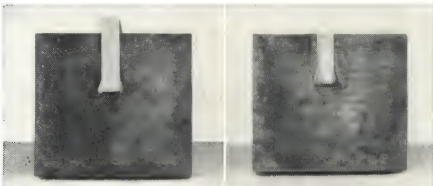
Mitco Open Steel Flooring



Panel of Mitco Open Steel Flooring

Note the depth of the cross bars. In addition to serving as struts, these cross bars provide transverse strength and prevent any lateral deflection.

Mitco, a pioneer open steel flooring, with an open area of 90%, is pressure formed, without the use of mechanical locking devices of any kind. Having no bolts or rivets, it has not these sources of possible weakness. It is not welded, hence it is free from residual stresses frequently produced in welding operations, stresses which may cause warping or possible failure of connections in service.



Section Showing Cross Bar in Dovetail, Before Pressing Operation

Section Showing Cross Bar and Bearing Bar After Pressing

In the making of Mitco, the bearing bars are prepared with a dovetail slot to receive the cross or transverse bars. Under hundreds of tons hydraulic pressure, the transverse bars are pressed into the bearing bars so that the metal in the

transverse bars completely fills the dovetails in the bearing bars. As the dovetails in the bearing bars are always above the neutral axis and are completely filled by the transverse bars, the strength of the full section is developed. The transverse bars, extending below the neutral axis not only serve as struts but also provide transverse strength, firmly locking the panel of Mitco into an integral unit, distributing concentrated loads over the entire panel and preventing any lateral deflection.

Free from bolts, rivets, acute angles or other obstructions, Mitco is practically self-cleaning and provides maximum light and ventilation from floor to floor.

Mitco Armorgrids



Main trucking aisle, in the plant of a well-known manufacturer, armored with Mitco Armorgrids

Imbedded in the floor, with the tops of the panels flush with the floor surface, Mitco Armorgrids absorb the brunt of shocks, grinding loads and continuous wear. They prevent cracking and potholing and materially prolong the life of concrete, cement, asphalt, mastic or other composition floors. They come completely fabricated and are easily and economically installed, made up in large panels to suit conditions.

MITCO

Reg. U. S. Pat. Off.

Mitco Shur-Site Treads

Mitco Shur-Site Treads, for stairs, ladders and fire escapes, are integral units made of Mitco Open Steel Flooring, with the rectangular openings, non-slipping and non-clogging surface and other Mitco advantages. They are furnished in widths and lengths to meet all requirements, ready to bolt directly to stair stringers. No shelf angles are required.

SAFE LOADS IN POUNDS BASED ON FIBRE STRESS OF 16,000 POUNDS PER SQUARE INCH

U—Safe Uniform Load in Pounds per Square Foot D—Deflection in Inches
C—Safe Concentrated Load in Pounds per Foot of Width

Size of bearing bars, in.	Size of cross bars, in.	2'0"	2'6"	3'0"	3'6"	4'0"	4'6"	5'0"	5'6"	6'0"	6'6"	7'0"	8'0"	9'0"
1/4 x 3/8	U	330	222	143										
	D	.085	.134	.192										
	C	330	265	215										
1/4 x 3/8	U	.068	.108	.154										
	D													
	C													
1/4 x 3/8	U	500	320	217										
	D	.085	.134	.192										
	C	500	400	325										
1/4 x 3/8	U	.068	.108	.154										
	D													
	C													
1 x 3/8	U	600	384	267	188	150								
	D	.064	.099	.143	.195	.256								
	C	600	480	400	330	300								
1 x 3/8	U	.051	.080	.115	.156	.205								
	D													
	C													
1 1/4 x 3/8	U	900	580	400	286	225								
	D	.064	.099	.143	.195	.256								
	C	900	725	600	500	450								
1 1/4 x 3/8	U	.051	.080	.115	.156	.205								
	D													
	C													
1 1/4 x 3/8	U	950	600	420	303	232	184	146	120					
	D	.051	.081	.115	.157	.205	.259	.321	.389					
	C	950	750	630	530	465	415	365	330					
1 1/4 x 3/8	U	.041	.064	.092	.125	.163	.207	.256	.310					
	D													
	C													
1 1/4 x 3/8	U	1425	900	633	457	350	278	220	182					
	D	.051	.081	.115	.157	.205	.259	.321	.389					
	C	1425	1125	950	800	700	625	550	500					
1 1/4 x 3/8	U	.041	.064	.092	.125	.163	.207	.256	.310					
	D													
	C													
1 1/4 x 3/8	U	1365	880	610	445	340	266	220	182	150	128	110		
	D	.043	.067	.094	.131	.166	.216	.267	.324	.385	.440	.522		
	C	1365	1100	915	785	680	600	550	500	450	415	385		
1 1/4 x 3/8	U	.034	.053	.077	.104	.137	.173	.214	.259	.308	.361	.418		
	D													
	C													
1 1/4 x 3/8	U	2050	1320	917	672	512	400	330	273	225	192	164		
	D	.043	.067	.094	.131	.166	.216	.267	.324	.385	.440	.522		
	C	2050	1650	1375	1175	1025	900	825	750	675	625	575		
1 1/4 x 3/8	U	.034	.053	.077	.104	.137	.173	.214	.259	.306	.361	.418		
	D													
	C													
1 1/4 x 3/8	U	2800	1780	1230	915	700	544	440	364	308	262	228	175	133
	D	.038	.057	.082	.112	.147	.185	.229	.276	.330	.387	.450	.580	.737
	C	2800	2225	1860	1600	1400	1225	1100	1000	925	850	800	700	600
1 1/4 x 3/8	U	.029	.046	.066	.090	.117	.148	.183	.221	.264	.308	.358	.468	.593
	D													
	C													
2 x 3/8	U	3650	2340	1618	1200	912	723	580	482	400	346	293	225	178
	D	.032	.050	.072	.099	.128	.163	.201	.243	.289	.341	.397	.516	.651
	C	3650	2925	2425	2100	1825	1625	1450	1325	1200	1125	1025	900	800
2 x 3/8	U	.026	.040	.057	.078	.102	.129	.160	.193	.230	.269	.314	.409	.518
	D													
	C													
2 1/4 x 3/8	U	4650	2960	2065	1515	1150	912	740	608	516	438	379	288	228
	D	.027	.044	.064	.087	.113	.148	.177	.214	.255	.305	.349	.455	.574
	C	4650	3700	3100	2650	2300	2050	1850	1675	1550	1425	1325	1150	1025
2 1/4 x 3/8	U	.023	.035	.051	.070	.091	.115	.142	.172	.204	.240	.279	.364	.460
	D													
	C													

SPANS TO RIGHT OF HEAVY LINE NOT RECOMMENDED

Standard Type "C" has bearing bars spaced on 1 1/8-in. centers and cross bars spaced on 4 3/8-in. centers, or 3 3/4-in. centers if preferred. This applies for grating with either 1/8-in. thick or 3/8-in. thick bearing bars. Closer or wider spacing of bearing bars and/or cross bars can be furnished to meet special requirements.

MITCO SHUR-SITE TREADS

Type "C"—1"x3/8"-Bars				Type "C"—1 1/4"x3/8"-Bars			
Width	Min. lgth.	Max. lgth.	A	Width	Min. lgth.	Max. lgth.	A
6 1/4"	1'6"	3'0"	2 1/2"	7 1/4"	2'0"	4'0"	4 1/2"
7 1/4"	1'6"	3'0"	4 1/2"	8 1/4"	2'0"	4'0"	4 1/2"
8 1/4"	1'6"	3'0"	4 1/2"	9 1/4"	2'0"	4'0"	7"
9 1/4"	1'6"	3'0"	7"	10 1/4"	2'0"	4'6"	7"
10 1/4"	1'6"	3'0"	7"	12"	2'0"	4'6"	7"

Note: The tables give standard widths and suggested minimum and maximum lengths. Other widths and any lengths can be furnished to meet requirements.

BLAW-KNOX COMPANY

Steel Grating

2041 Farmers Bank Building, PITTSBURGH, PA.

NEW YORK, N. Y., 342 Madison Avenue
CHICAGO, ILL., Peoples Gas Building

PHILADELPHIA, PA., Broad Street Station Building
BIRMINGHAM, ALA., Brown-Marx Building

PACIFIC COAST DIVISION: Blaw-Knox & Western Pipe Corp., SAN FRANCISCO, CALIF.

EXPORT DIVISION: Blaw-Knox International Corp., PITTSBURGH, PA.

LONDON, ENGLAND, New Oxford House, Hart Street, HOLBORN, W. C. 1

PARIS, 8^e, FRANCE, 11 Rue La Boétie

Blaw-Knox Electroforged Steel Grating and Open Flooring

The advantages of actual one-piece construction presented exclusively by Blaw-Knox Electroforged Steel Grating will be especially apparent to those who have used, or are using today, ordinary grating which is mechanically assembled. It is a simple structure, electroforged for strength and permanence, marked by an entire absence of loose parts and characterized by an extremely low maintenance cost.

Exclusive Features of Blaw-Knox Electroforged Steel Grating

Non-slip — Perfect traction is afforded by the slightly rough edges of the twisted cross bars which protrude slightly above the surface of the bearing bars.

Greatest Strength — The electroforged one-piece construction utilizes full strength of the gross amount of metal.

The resulting one-piece section has maximum loading capacity per pound.



Electroforged

Longest Life — Because of its design and exclusive method of fabrication Electroforged Grating presents a one-piece construction free from cracks, joints, or crevices of any kind. This also enables Electroforged Grating to be 100% protected by paint or galvanizing, leaving no part exposed to corrosive action.

One-piece Grating — Blaw-Knox Electroforged Grating is manufactured by laying the twisted bars across the top of the bearing bars without slotting or cutting the metal.

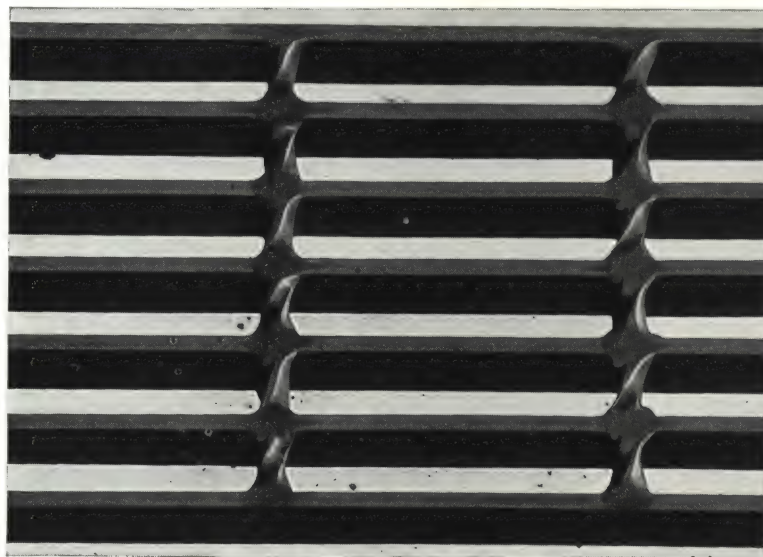
Enormous pressure and resistance welding electroforges the bar into one piece where the metals cross.

Self-cleaning — No acute angles or projections to collect debris.

Better Light and Ventilation — The construction of Blaw-Knox Electroforged Grating permits clean-cut rectangular openings.

Maximum lighting and ventilation are assured.

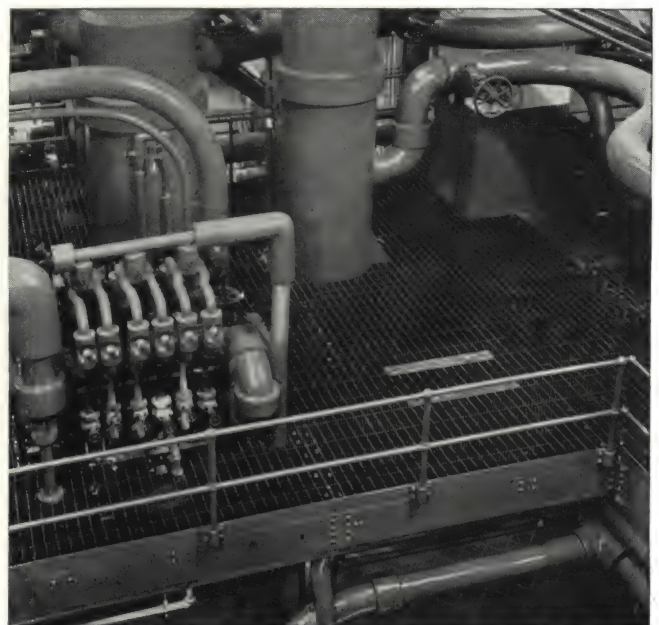
Easily Installed — Installation cost of Blaw-Knox Grating is reduced to a minimum by a very simple and secure method of fastening the grating.



Section of Electroforged Steel Grating
Showing rigid welding and sharp, flat topped bars

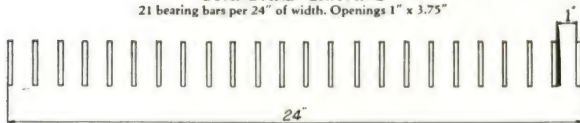


Electroforged Grating in Camden (N. J.) County Park Pumping Station

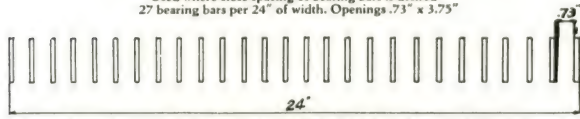


Blaw-Knox Electroforged Grating Installed in Large Power Station

STANDARD GRATING
21 bearing bars per 24" of width. Openings 1" x 3.75"



SPECIAL CLOSE MESH GRATING
Used where close spacing of bearing bars is desired
27 bearing bars per 24" of width. Openings .73" x 3.75"



TO FIND LOAD CAPACITY, WEIGHT AND DEFLECTIONS, ADD 20% TO STANDARD LOAD TABLE AND SPECIFICATIONS ABOVE

Grating Samples

The most convincing argument for the superior features of Blaw-Knox Electroforged Grating is the grating itself. An actual sample is yours for the asking.

Sizes of Electroforged Gratings

Blaw-Knox grating panels are 24 in. wide. Maximum length of panels 20 ft. Lengths of stair treads furnished to suit your requirements. Odd widths of panels, as shown in table, supplied to fill out necessary dimensions.

Standard cross-bar spacing 4 in. center to center. Spacings of 3, 2½, 2 and 1¾ in. can also be furnished.

Blaw-Knox Stair Treads

The new Blaw-Knox Electroforged Stair Tread is designed for tremendous strength against impact. It is now manufactured using a nosing made from rolled diamond checkered plate.

STANDARD SIZES AND SPECIFICATIONS

Type "J"—1 x ¾ in. Bars				Type "L"—1¼ x ¾ in. Bars			
Width, in.	Min. length, ft.-in.	Sug. max. length, ft.-in.	A, in.	Width, in.	Min. length, ft.	Sug. max. length, ft.-in.	A, in.
6 1/16	1-6	3-0	2 1/2	7 3/4	2	4-0	4 1/2
7 1/4	1-6	3-0	4 1/2	8 7/16	2	4-0	4 1/2
8 7/16	1-6	3-6	4 1/2	9 5/8	2	4-0	7
9 5/8	1-6	3-6	7	10 13/16	2	4-6	7
10 13/16	1-6	3-6	7	12	2	4-6	7

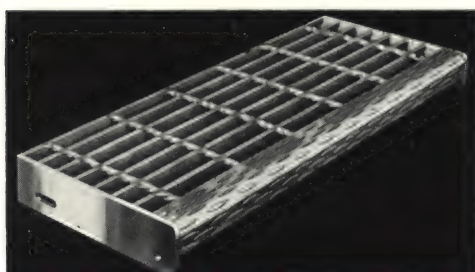
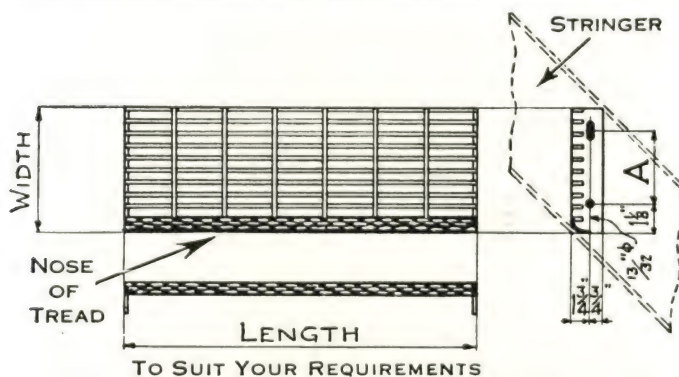


TABLE OF SAFE LOADS

C—Safe concentrated load in pounds per foot of width																
U—Safe uniform load in pounds per foot of width. D—Deflection in inches.																
Span, ft.-in.		2-0	2-6	3-0	3-6	4-0	4-6	5-0	5-6	6-0	6-6	7-0	8-0	9-0		
Size of bearing bars 1 in. apart																
$\frac{3}{4} \times \frac{1}{8}$	U	330	222	143												
	D	.085	.134	.192												
	C	330	265	215												
	D	.068	.108	.154												
$\frac{3}{4} \times \frac{3}{16}$	U	500	320	217												
	D	.085	.134	.192												
	C	500	400	325												
	D	.068	.108	.154												
$1 \times \frac{1}{8}$	U	600	384	267	188	150										
	D	.064	.099	.143	.195	.256										
	C	600	480	400	330	300										
	D	.051	.080	.115	.156	.205										
$1 \times \frac{3}{16}$	U	900	580	400	286	225										
	D	.064	.099	.143	.195	.256										
	C	900	725	600	500	450										
	D	.051	.080	.115	.156	.205										
$1\frac{1}{4} \times \frac{1}{8}$	U	950	600	420	303	232	184	146	120							
	D	.051	.081	.115	.157	.205	.259	.321	.389							
	C	950	750	630	530	465	415	365	330							
	D	.041	.064	.092	.125	.163	.207	.256	.310							
$1\frac{1}{4} \times \frac{3}{16}$	U	1425	900	633	457	350	278	220	182							
	D	.051	.081	.115	.157	.205	.259	.321	.389							
	C	1425	1125	950	800	700	625	550	500							
	D	.041	.064	.092	.125	.163	.207	.256	.310							
$1\frac{1}{2} \times \frac{1}{8}$	U	1365	880	610	445	340	266	220	182	150	128	110				
	D	.043	.067	.094	.131	.166	.216	.267	.324	.385	.440	.522				
	C	1365	1100	915	785	680	600	550	500	450	415	385				
	D	.034	.053	.077	.104	.137	.173	.214	.259	.308	.361	.418				
$1\frac{1}{2} \times \frac{3}{16}$	U	2050	1320	917	672	512	400	330	273	225	192	164				
	D	.043	.067	.094	.131	.166	.216	.267	.324	.385	.440	.522				
	C	2050	1650	1375	1175	1025	900	825	750	675	625	575				
	D	.034	.053	.077	.104	.137	.173	.214	.259	.308	.361	.418				
$1\frac{3}{4} \times \frac{1}{8}$	U	2800	1780	1230	915	700	544	440	364	308	262	228	175	133		
	D	.038	.057	.082	.112	.147	.185	.229	.276	.330	.387	.450	.580	.737		
	C	2800	2225	1860	1600	1400	1225	1100	1000	925	850	800	700	600		
	D	.029	.046	.066	.090	.117	.148	.183	.221	.264	.308	.358	.468	.593		
$2 \times \frac{1}{8}$	U	3650	2340	1618	1200	912	723	580	482	400	346	293	225	178		
	D	.032	.050	.072	.099	.128	.163	.201	.243	.289	.341	.397	.516	.651		
	C	3650	2925	2425	2100	1825	1625	1450	1325	1200	1125	1025	900	800		
	D	.026	.040	.057	.078	.102	.129	.160	.193	.230	.269	.314	.409	.518		
$2\frac{1}{4} \times \frac{1}{8}$	U	4650	2960	2065	1515	1150	912	740	608	516	438	379	288	228		
	D	.027	.044	.064	.087	.113	.148	.177	.214	.255	.305	.349	.455	.574		
	C	4650	3700	3100	2650	2300	2050	1850	1675	1550	1425	1325	1150	1025		
	D	.023	.035	.051	.070	.091	.115	.142	.172	.204	.240	.279	.364	.460		

Maximum allowable fiber stress 16,000 lbs. per sq. in.

What to Specify When Ordering Blaw-Knox Electroforged Grating

- (1) Size of bars and type—standard or special.
- (2) Whether to be painted or galvanized.
- (3) Complete dimensions of area to be covered.
- (4) Direction bearing bars are to run.
- (5) Is clearance to be allowed?

IRVING IRON WORKS COMPANY

ESTABLISHED IN 1902

Third and Creek Streets, LONG ISLAND CITY, N. Y.

BRITISH LICENSEES: Estler Brothers, Ltd., South Molton Road, LONDON, E. 16, ENGLAND

CANADIAN LICENSEES: Crowe's Iron Works, Ltd., Suffolk Street and London Road, GUELPH, ONTARIO, CANADA

OFFICES IN PRINCIPAL CITIES—CONSULT LOCAL TELEPHONE BOOK FOR ADDRESS

Makers of

IRVING SUBWAY GRATING PRODUCTS

Continuity or Paneled

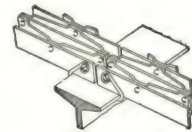
Grating—Floor Armoring—Stair Treads—Bridge Decking—Steel Pavement

Irving "Subway Continuity" Grating is an ideal industrial floor—slip-proof, stumble-proof and free from all underfoot hazards. It provides a perfect traffic and traction surface, *without a joint or joint lines*, because of the unique method of splicing the units. There are no separate panels to loosen, wobble or up-end, and no butt-joints for wheel loads to pound.

The illustration below clearly shows the clean-cut, neat appearance of an Irving floor—no joints or joint lines—it is a *one-piece job from side-to-side and continuous in all directions*. Irving "Subway" Grating can be furnished in panels if desired.

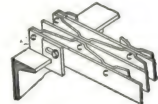
TRADE MARKS
(Reg. U. S. Pat. Off.)

SUBWAY
IRVICO
ARMORING
RETICULINE
UNIFIED
STREAMLINE
CONTINUITY
VIZABLEDG
SAFTRED
SAFSTEP
SAFKAR
SUNWAY
SUBLIT



Type C-1

1/4-in. round hooks, furnished as standard equipment unless otherwise specified; sometimes furnished straight, of varying length, to be bent on the job



Type C-2

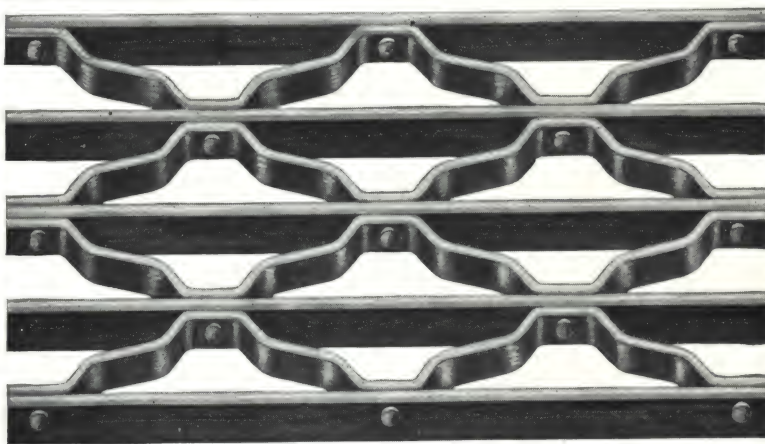
Adjustable clip, furnished for use with angle or channel iron support; can be used only with Types "M," "Q," "V" and requires full data on location of supports

Fastening Devices Most Commonly Used

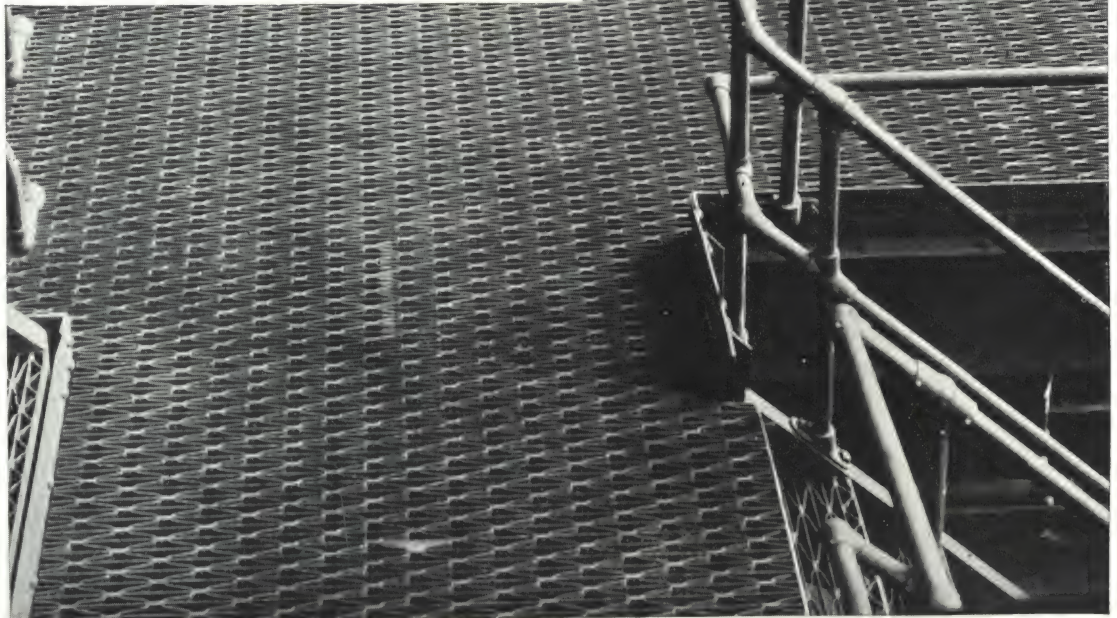
IRVING

CONTINUOUS
IN ALL
DIRECTIONS

MAXIMUM
FOOT
CONTACT



NO
JOINTS
ANYWHERE
•
MAXIMUM
WHEEL
CONTACT
•
TRUSSED
FOR
STRENGTH
•
RIVETED
FOR
SECURITY



IRVING "CONTINUITY" (TRADE-MARK) STEEL FLOORING AND FLOOR ARMORING

Table of Safe Loads for Types "M" and "O" only; for Types "Q" and "R," Increase 40%; for Type "V," decrease 50%.
Maximum fibre stress, 16,000 lb.

Type of mesh	Symbol and depth	Specifications, in.		Wt. lb. per sq. ft.					U = Uniform Load, lbs. per sq. ft. C = Concentrated loads, lbs. per ft. of width. D = Deflection in inches																
		Straight bars	Reticu- line bars	Type					U	D	U	D	U	D	U	D	U	D	U	D	U	D			
				M	O	Q	R	V																	
To be specified in ordering. (See diagrams below)	1S ¾"	¾x1⅛	½x1⅛	5.4	5.8	7.6	7.8	3.3	U	330	222	143													
									D	.085	.134	.192													
									C	330	265	215													
									D	.068	.108	.154													
	1SA ¾"	¾x3/16	½x3/16	6.8	7.2	9.2	9.6	4.1	U	500	320	217													
									D	.085	.134	.192													
									C	500	400	325													
									D	.068	.108	.154													
	2S 1"	1 x1⅛	¾x1⅛	7.6	8.2	10.7	11.1	4.7	U	600	384	267	188	150											
									D	.064	.099	.143	.195	.256											
									C	600	480	400	330	300											
									D	.051	.080	.115	.156	.205											
	2SA 1"	1 x3/16	¾x1⅛	9.4	9.9	12.8	13.2	5.7	U	900	580	400	286	225											
									C	.064	.099	.143	.195	.256											
									D	900	725	600	500	450											
									D	.051	.080	.115	.156	.205											
	3SA 1¼"	1¼x1⅛	¾x3/8	8.7	9.2	12.2	12.6	5.4	U	950	600	420	303	232	184	146	120								
									D	.051	.081	.115	.157	.205	.259	.321	.389								
									C	950	750	630	530	465	415	365	330								
									D	.041	.064	.092	.125	.163	.207	.256	.310								
3S 1¼"	1¼x3/16	¾x1⅛	10.9	11.4	15.0	15.3	6.7	U	1425	900	633	457	350	278	220	182									
								C	.051	.081	.115	.157	.205	.259	.321	.389									
								D	1425	1125	950	800	700	625	550	500									
								D	.041	.064	.092	.125	.163	.207	.256	.310									
4SA 1½"	1½x1⅛	¾x1⅛	9.8	10.4	13.8	14.2	6.0	U	1365	880	610	445	340	266	220	182									
								C	.043	.067	.094	.131	.166	.216	.267	.324									
								D	1365	1100	915	785	680	600	550	500									
								D	.034	.053	.077	.104	.137	.173	.214	.259									
								U	2050	1320	917	672	512	400	330	273									
								D	.043	.067	.094	.131	.166	.216	.267	.324									
								C	2050	1650	1375	1175	1025	900	825	750									
								D	.034	.053	.077	.104	.137	.173	.214	.259									
								U	2800	1780	1230	915	700	544	440	364									
								C	.038	.057	.082	.112	.147	.185	.229	.276									
								D	2800	2225	1860	1600	1400	1225	1100	1000									
								D	.029	.046	.066	.090	.117	.148	.183	.221									
								U	3650	2340	1618	1200	912	723	580	482									
								D	.032	.050	.072	.099	.128	.163	.201	.243									
								C	3650	2925	2425	2100	1825	1625	1450	1325									
								D	.026	.040	.057	.078	.102	.129	.160	.193									
								U	4650	2960	2065	1515	1150	912	740	608									
								C	.027	.044	.064	.087	.113	.148	.177	.214									
								D	4650	3700	3100	2650	2300	2050	1850	1675									
								D	.023	.035	.051	.070	.091	.115	.142	.172									

Heavy loads—Occasionally there are open flooring requirements calling for very heavy loading, especially heavy wheel concentration. These, of course, call for heavy "special" designs and we are prepared to design and fabricate an Irving "Subway" Flooring that will meet your requirements.



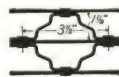
Type "M"

7 in. c. to c. rivets
1 1/8 in. between bars



Type "Q"

7 in. c. to c. rivets
3/4 in. between bars



Type "O"

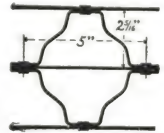
3 1/2 in. c. to c. rivets
1 in. between bars



Type "R"

3 1/2 in. c. to c. rivets
3/4 in. between bars

Right:



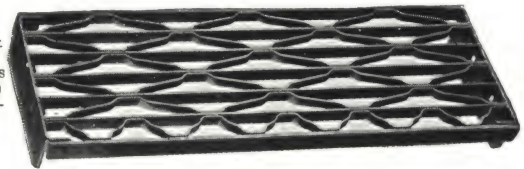
Type "V"

5 in. c. to c. rivets
2 1/8 in. between bars

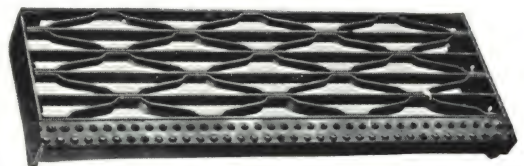
IRVING "VIZABLEDG" SAFSTEPS

STANDARD "VIZABLEDG" STOCK SIZES

Stock No.	Width, in.	Length, ft. in.	Distance "A," in.	Weight, lb.	Specifications (see * below)
1	5 3/8	1 7	2 1/2	6 0	A
2	5 3/8	1 10 1/2	2 1/2	7 0	A
3	5 3/8	2 2	2 1/2	7 7	A
4	5 3/8	2 5 1/2	2 1/2	11 3	B
5	5 3/8	3 0 1/2	2 1/2	14 0	B
6	7 1/8	1 7	4 1/2	8 2	A
7	7 1/8	1 10 1/2	4 1/2	9 4	A
8	7 1/8	2 2	4 1/2	10 4	A
9	7 1/8	2 5 1/2	4 1/2	16 1	B
10	7 1/8	3 0 1/2	4 1/2	18 8	B
11	8 1/4	3 7 1/2	4 1/2	30 3	C
12	8 1/4	3 11	4 1/2	32 9	C
13	8 1/4	4 6	4 1/2	37 4	C
14	10 3/8	1 7	7	10 4	A
15	10 3/8	1 10 1/2	7	11 9	A
16	10 3/8	2 2	7	13 8	A
17	10 3/8	2 5 1/2	7	20 0	B
18	10 3/8	3 0 1/2	7	24 0	B
19	10 3/8	3 7 1/2	7	39 0	C
20	10 3/8	3 11	7	42 1	C
21	10 3/8	4 6	7	48 7	C
22	12 1/8	3 7 1/2	7	44 4	C
23	12 1/8	3 11	7	47 6	C
24	12 1/8	4 6	7	54 2	C



With "O" Type Crimp Nosing

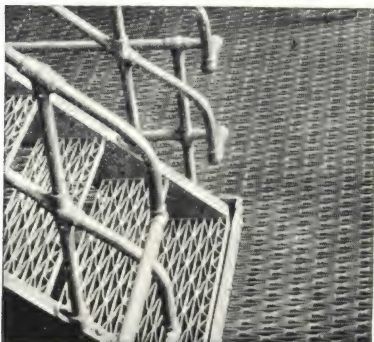


With Nosing of Raised Perforated Metal

*In dimensions of steel members, Safsteps are furnished in three types—A, B and C.

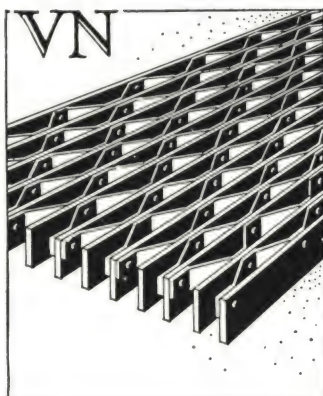
	A	B	C
Straight bars, in.	3/4 x 1/8	1 x 1/8	1 1/4 x 3/16
Reticuline bars, in.	1/2 x 1/8	3/4 x 1/8	1 1/2 x 1/4
Nosing bars, in.	1 x 1/4	1 1/4 x 1/4	1 1/2 x 1/4
Carrier bars, in.	2 1/2 x 3/16	2 1/2 x 3/16	2 1/2 x 3/16

Order by stock number from table above, for example: 50 Irving "Vizabledeg" Safsteps, stock No. 14.



KERLOW STEEL FLOORING COMPANY

Grating Flooring, Bridge Paving, Safety Steps, and Allied Products
222-238 Culver Avenue, JERSEY CITY, N. J.



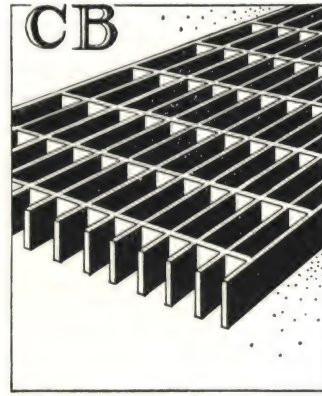
Series "VN"
—Grating flooring—the standard (riveted) reticulated mesh grating. Rivets are spaced 6 3/4 in. on centers. This grating has a clear opening of 1 in.



Series "F"
—Grating flooring—the standard (round cross member) rectangular mesh grating. Cross mem-

bers are spaced 6 3/4 in. on centers. This grating has a clear opening of 1 3/4 in.

Series "CB"
—Grating flooring—the standard (cross bar on edge) rectangular mesh grating. Cross bars are spaced 4 3/4 in. on center. This grating has a clear opening of 1 in.



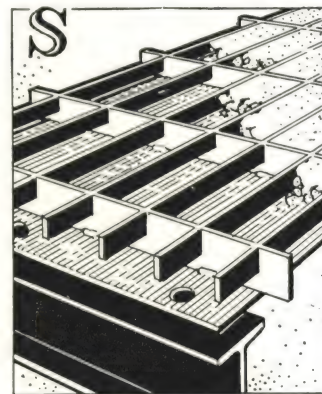
Series "M"
Slab units are fabricated in various weights and strengths to meet all loading and traffic requirements. The design is always in balance through perfect distribution of metal. This structure, installed and filled with concrete, weighs one-half of a reinforced concrete slab of corresponding strength. Top surface pattern is designed to protect concrete fill and to provide a truer

Kerlow Steel Floors

"Boldej" "Steelej"
"Rapid Transit"
Trade Mark Reg.
U. S. Pat. Off.

heavy one-piece plate bottom increases distribution of concentrated loads and eliminates possible voids caused by leakage of concrete fill before initial set.

Series "S"
Slab unit contains all the construction attributes of other Kerlow bridge and floor slab designs. The

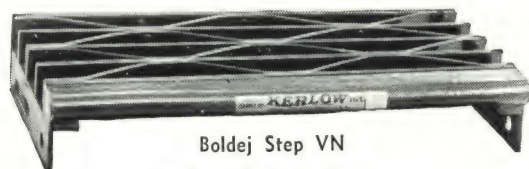


"Service Products"—In addition to the complete line of steel floorings as shown, the Kerlow Company designs and manufactures Storage Racks, Shelving, Plate Floors and Steel Construction, and provides a complete engineering service for this purpose. A word to your local Kerlow representative will place this engineering department at your disposal promptly and without obligation. Below are shown three widely used types of grating—other bar and rivet spacings are also available.

Table of Safe Loads (Uniformly Distributed) for VN Gratings

For Type CB decrease 7%; for Type FN decrease 25%

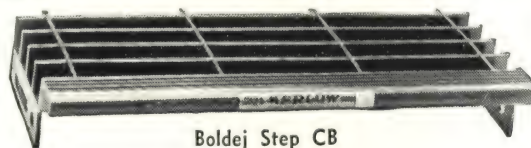
				TABLE OF SAFE LOADS, IN POUNDS PER SQUARE FOOT, FOR VARIOUS SPANS														
Type	Grating, No. and depth	Bar specifications	Wt., lb. per sq. ft.		2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"
Type as selected from diagrams above	No. 1 ¾"	St. bars ¾" x 1 ⅝" Cr. bars ¾" x ⅝"	6.5	Load D	319 .20	221 .31	164 .42	125 .51	99 .65	80 .80	66 1.01							
	No. 2 1"	St. bars 1" x 1 ⅝" Cr. bars ¾" x ⅝"	7.5	Load D	472 .15	328 .22	241 .30	185 .39	146 .49	118 .60	98 .72	82 .85	70 .99					
	No. 3 1"	St. bars 1" x 3 ⅞" Cr. bars ¾" x ⅝"	9.0	Load D	622 .12	432 .17	318 .23	243 .32	192 .40	155 .48	129 .57	108 .68	92 .79	79 .91	69 1.04			
	No. 4 1¼"	St. bars 1¼" x ⅝" Cr. bars ¾" x ⅝"	8.5	Load D	719 .10	499 .15	368 .20	281 .27	222 .35	180 .42	149 .50	125 .59	106 .69	92 .80	80 .92	70 1.07	62 1.25	
	No. 5 1¼"	St. bars 1¼" x 3 ⅞" Cr. bars ¾" x ⅝"	10.5	Load D	958 .10	668 .14	490 .18	374 .24	296 .31	239 .39	198 .48	167 .55	142 .65	122 .75	106 .86	93 .97	83 1.09	74 1.24
	No. 6 1½"	St. bars 1½" x ⅝" Cr. bars ¾" x ⅝"	9.5	Load D	1070 .09	744 .13	548 .17	418 .22	331 .27	267 .35	221 .43	186 .51	158 .59	137 .67	119 .77	104 .87	92 .98	83 1.11
	No. 7 1½"	St. bars 1½" x 3 ⅞" Cr. bars ¾" x ⅝"	12.0	Load D	1410 .09	980 .12	722 .16	552 .21	436 .27	352 .34	292 .41	245 .48	209 .56	180 .65	157 .75	138 .85	122 .96	109 1.08
	No. 9 1¾"	St. bars 1¾" x 3 ⅞" Cr. bars ¾" x ⅝"	13.5	Load D	1884 .07	1310 .10	965 .13	737 .17	582 .22	471 .27	390 .33	327 .39	279 .46	241 .53	209 .61	184 .69	163 .79	145 .89
	No. 11 2"	St. bars 2" x 3 ⅞" Cr. bars 1" x ⅝"	16.0	Load D	2490 .06	1730 .09	1273 .12	974 .15	770 .19	622 .24	516 .30	432 .36	369 .41	318 .47	277 .53	243 .60	215 .68	192 .77
No. 13 2¼"	St. bars 2¼" x 3 ⅞" Cr. bars 1" x ⅝"	17.5	Load D	3212 .05	2230 .08	1640 .11	1255 .13	994 .17	803 .22	665 .27	557 .32	475 .38	410 .44	356 .49	314 .54	278 .62	248 .70	



Boldej Step VN

Kerlow Safety Steps

An improved Boldej, strong, light, sanitary industrial stair tread. A rectangular section of Kerlow Flooring—with Kerlow (patented) Stair Step Carriers at each end.



Boldej Step CB

Kerlow Steelej Armor

Series "VLA" Steelej consists of a series of specially formed steel bearing bars on edge, which when laid on a floor and filled with mastic or concrete, form a one-piece protective steel armor all over.

ACME STEEL COMPANY

Manufacturers of Acme Floorsteel for Industrial Floors

2842 Archer Avenue, CHICAGO, ILL.

BRANCHES

BROOKLYN, N. Y., 219 36th Street
ATLANTA, GA., 603 Stewart Avenue, S. W.
NEW ORLEANS, LA., 518 Gravier Street

MONTREAL, QUE., 365 St. Paul Street, W.
WINNIPEG, MAN., National Cartage Warehouse
TORONTO, ONT., 32 Front Street, W.

LOS ANGELES, CAL., 2136 Sacramento Street
SAN FRANCISCO, CAL., 202 Davis Street
SEATTLE, WASH., 114 Railroad Avenue, S.

ACME FLOORSTEEL

FOR LONG LIFE INDUSTRIAL FLOORS

U. S. Patent No. 1,432,171, Oct. 17, 1922. Other Patents Pending.
Canadian Patents No. 303,151, Aug. 19, 1930; No. 303,152, Aug. 19, 1930



A permanently smooth, quiet, non-skid surface. Cracks and holes cannot develop

Acme Floorsteel

Acme Floorsteel provides long-life floors at low cost.

- (1) The flexible grid is easy to lay.
- (2) The surface is quiet and non-skid.
- (3) Exposed steel edges bear the load.
- (4) Cracks, holes, and ruts cannot develop.
- (5) Floor is permanently smooth and even.
- (6) Maintenance costs are practically eliminated.

Floor Structure—Acme Floorsteel is embedded flush with the top in concrete and asphalt floors, and literally provides a network of steel rails for truck wheels. Two or more of these rails are at all times supporting each wheel.

The small mesh in combination with the light section of rolled steel members makes a permanently smooth and quiet floor. Under the heaviest trucking the exposed edges of the steel ribs become slightly mushroomed, presenting an increased area of steel in the surface. This protects the material next to the rib and prevents shattering.



Delivered on the job in easily handled rolls



Small mesh and light section of steel—an outstanding advantage of Acme Floorsteel

Sizes—Depths $\frac{5}{8}$ and $\frac{1}{2}$ in.; $\frac{5}{8}$ in. recommended for all severe conditions.

Mesh $1\frac{1}{4} \times 1\frac{1}{4}$ in.; made of strip steel .065 in. thick. Stock sizes $47\frac{1}{2}$ and 60 in. wide x 25 ft. long in $\frac{5}{8}$ -in. depth.

Other widths in $\frac{5}{8}$ in. and all widths in $\frac{1}{2}$ in. made to order in multiples of $2\frac{1}{2}$ in., up to $72\frac{1}{2}$ in. Lengths as desired.



The flexible grid is easy to lay. Large sections are joined into one continuous mat

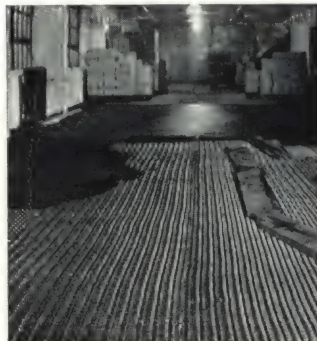
For New or Old Floors—Acme Floorsteel is practical for reinforcement of new or old floors and truckways. It is used in concrete or asphalt mastics, over concrete, wood or steel filled with cold mastic, hot mastic or other suitable material.

Laying New Floors—Acme Floorsteel is rolled out on the base course or sub-floor in large sections which are joined by pins and wires into one continuous mat. Filling material is then placed and troweled. As an alternative, Floorsteel may be pressed or tamped into the surface after floor has been struck off at finish line.

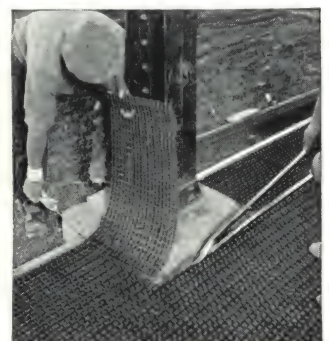
Repairing Old Floors—Repairing an old floor is a simple matter with Acme Floorsteel. When used over old concrete or brick, the floor should be previously prepared by filling holes, or uneven worn spots and cracks with a suitable grout. An asphalt bond coat is applied, and the Acme Floorsteel laid in the usual manner with mastic used for the filling material.

When used over wood, after the worn maple wearing-floor has been removed, the laying of Acme Floorsteel should be done with the operations above described. In addition, the Floorsteel should be fastened to the base by means of Acme Floorsteel Anchors provided for this purpose.

Fitting—Fitting Acme Floorsteel around an obstruction is easily and quickly done by cutting the steel on one side and pulling two wires.



Virtually any type of old industrial floor can be quickly resurfaced with Acme Floorsteel



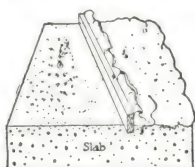
Special Snips are loaned when trimming is necessary

SNEAD & COMPANY

Self-anchoring Armor Grids for Concrete and Asphalt Floors (Snead Patents)

TELEPHONE
Delaware 3-350092 Pine Street, JERSEY CITY, N. J.
For Snead Library Equipment and Snead Partitions, see File Index**Snead Armor Grids Meet the Following Industrial Requirements**

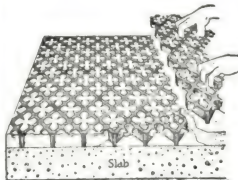
- | | |
|---|---|
| 1—Permanent—Non-dusting—Quiet | 5—Withstand Shocks |
| 2—Offer Minimum Resistance to Traffic | 6—Impervious to Acid, Moisture, Temperature Changes |
| 3—Afford Good Traction Under All Conditions | 7—Good Appearance and Easy to Clean |
| 4—Protect Concrete or Mastic | 8—Inexpensive to Install and Maintain |

5 Superior Features**How to Install in Concrete****First**

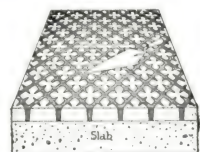
Screed off slab to true level surface, exact depth of grid below finished floor level

**Second**

When slab or leveling coat has partially set, flow on surface coat of rich 1:2 mix made with fine sharp sand

**Third**

Press grids into surface coat matching pattern and allowing $\frac{1}{8}$ in. clearance between grids. Bottom grids firmly on slab

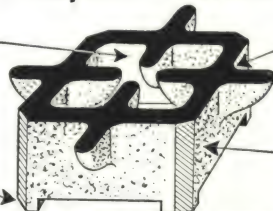
**Fourth**

Screed off excess grout, float in thoroughly to fill all voids and trowel smooth. Finished grout should be flush with, or about $\frac{1}{8}$ in. higher than, top surface of grid

Note: Any grid can be shaped for odd-dimensioned areas, drains, etc., with a hack saw, cold chisel and hammer.

Small symmetrical openings permit rolling and sliding traffic in all directions, without wearing out floor material

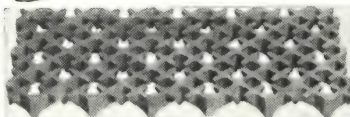
Pedestals provide automatic means of leveling, and allow floor material to flow under and interconnect all pockets



All corners rounded. No acute angles. No thin fins to break

Projecting ribs hold down floor material and prevent spreading

Roughened and tapered side walls bond perfectly with floor material without special anchoring devices

**No. 10 Lightweight Armor****No. 30 Heavy Duty Armor****Armor Grids Eliminate Floor Repairs**

Under grinding truck wheels, banging boxes and trunks, rolling barrels and milk cans, the dropping of heavy castings and severe traffic conditions of every sort, the best floor surfaces are in need of constant repairs, which are expensive and necessitate costly delays to production.

Snead Armor Grids eliminate the floor repair problem. Set in cement or asphalt, they armor the floor, carry the load and receive the shocks. They have been in wide use over 20 years, and during this time no installation of Snead grids ever had to be renewed, even under the hardest service.

Snead Armor Grids do not break, work loose or wear slippery. They bond perfectly with the floor mass, hold it down and keep it intact. They distribute heat strains and keep asphalt from flowing. They prevent spalling and dusting of concrete. Pedestals are provided on the under side of each grid to expedite setting and to raise the ribs off the slab, thus permitting the finish grout to flow under the ribs and interconnect all pockets. They present a smooth running surface and they wear indefinitely.

Specification for Installing Over Concrete Base

Base shall be brought to a true and even surface exactly the depth of the grid below the finished floor level. When the slab has set enough to hold the weight of the grids flow on a surface coat of rich 1:2 mix using clean, sharp sand; press the grids into the mix until they rest firmly on the slab. (Specify whether grids shall be laid in straight rows or staggered or laid herringbone). Grids shall be pressed into the surface coat until the mix squeezes through the openings at the top; excess grout shall be screeded off and given a trowel finish, leaving the concrete flush or about $\frac{1}{8}$ in. higher than the iron.

Specification for Installing in Asphalt Over Concrete

Prepare base slab as described above. Then apply a hot mix of asphalt mastic not less than 350° F. with no particles of aggregate over $\frac{1}{4}$ in. in diameter. Grids shall be pressed into the asphalt mastic until they rest firmly on the slab. Asphalt shall be brought $\frac{1}{8}$ or $\frac{1}{4}$ in. over grids and a second rubbing shall be given after filling with clean, sharp sand.

Specification for Installing in Asphalt Over Wood Floors

Floor boards shall be laid close and securely nailed to bearings, which should not be over 16 in. on centers. All loose knots and knot holes shall be covered with sheet metal. Over this lay two thicknesses of waterproof felt. Then proceed as described in preceding paragraph.

Right:

3350 sq. ft. No. 20 Snead ARMOR GRID—Chas. R. Hedden Co., Newark, N. J., Contractor—installed in March 1929 for Merchants Refrigerating Co., Jersey City, N. J.

After testing many floor materials, No. 20 Snead Grids were selected as most economical per foot, per year, by the owner of this railroad platform, one of the largest refrigerating companies in the country.

All of this company's plants now have Snead Grid protection

**DIMENSIONS, WEIGHTS AND DISPLACEMENT**

Grid No.	Length, in.	Width, in.	Rib depth, in.	Over-all depth, in.	Rib thickness, surface, in.	Rib spacing, ctr. to ctr., in.	Area, sq. ft.	Effective armor, % total area	Openings, in.	Weight approx., lb.	Finished aggregate displaced, %
10 Lightweight	24	12	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{4}$	$2\frac{1}{2}$	2	41	$\frac{3}{4}$	10	21
20 General purpose	24	12	1	$1\frac{1}{4}$	$\frac{1}{4}$	$2\frac{1}{2}$	2	41	$\frac{3}{4}$	20	21
30 Heavy duty	24	12	$1\frac{1}{4}$	$1\frac{3}{4}$	$\frac{3}{8}$	$2\frac{1}{2}$	2	41	1	30	21
15 Medium duty	24	12	$\frac{3}{4}$	1	$\frac{1}{4}$	$2\frac{1}{2}$	2	41	$\frac{3}{4}$	$7\frac{1}{2}$	21

A FEW OF MANY USERS

Automobile Manufacturers
 Buick Motor Car Co.
 Ford Motor Co.
 Mack International Truck Co.
 Pierce Arrow Motor Car Co.

Chemical Industries
 Colgate & Co.
 Electric Storage Battery Co.
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Food Products
 Armour & Co.
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 General Baking Co.
 Hershey Chocolate Corp.
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 Premier-Pabst Brewing Co.
 Runkel Bros.
 Schaeffer Brewing Co.
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 Rundle Mfg. Co.
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 Brooklyn-Manhattan Transit Co.
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 Pennsylvania R. R.
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Rubber Products
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 B. F. Goodrich Rubber Co.
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 H. W. Johns-Manville Co.
 Port of New York Authority

Spiral Slide Fire Escapes

500 North Buchanan Street, LOUISVILLE, KY.

Products

LOGAN SPIRAL SLIDE ESCAPES for use on office buildings, apartments, hotels, schools, orphanages, hospitals and institutions.

LOGAN TUBULAR FIRE ESCAPES for schools and institutions.

LOGAN CHUTES (Fire Escapes, Tubular and Spiral).
For Logan Ornamental Iron Work, see File Index.

Facilities

A long established firm, equipped to execute contracts in any part of the country. We erect the escape complete.

Advantages of the Spiral Slide Escape

Has an exit capacity three times greater than an ordinary stairway, but uses only 40% as much floor space.

The cost compares favorably with pressed steel stairs. In many cases the spiral escape is much less in cost.

There are no steps, consequently there is no chance for stumbling or falling. Escape can be entered from many floors at the same time. There is no acceleration, therefore escape can be used on thirty-story buildings just as safely as on buildings of one or two stories.

Architects everywhere are now using the Logan Spiral Escape to solve their emergency exit problem. They are designing the stairways to handle normal load only—emergency exit capacity furnished by Logan Spiral Slide Escape. It saves more than half the space. Exit capacity three times greater than average stairway.



Outside Installation,
Standard 5-ft. Di-
ameter Spiral

For hospitals a 7-ft. diameter handles patients on standard 36-in. mattress—"No injury even to the worst hospital case"

Specifications—Spiral Slide

The fire escape shall be the Logan Spiral Slide Escape made by LOGAN CO., Louisville, Ky. It shall be placed upon a concrete foundation.

The escape proper shall be entirely of steel, 5 ft. in diameter, placed as shown on plans, and shall have one entrance at each floor above the first.

The cylinder shall be of No. 12 U. S. Standard gauge sheet steel, for the first 18 in.; the next 6 ft. of No. 14 gauge, and the remainder of No. 16.

The spiral slide shall be of No. 16 gauge galvanized sheet properly banked at outside and securely attached to a center core of 3-in. core inside diameter standard black pipe. Slide to be dished so as to prevent contact with outside shell and is to be made in overlapping sections so it will present no crevices or cracks.

Entrance doors shall be wood core metal covered, in pairs, equipped with single action spring hinges. (Omit this paragraph on outside installations.)

"Doors can be equipped with panic bar locks, electric locks or entrance lights at additional expense—these provide protection against falling through entrance doors."

Exit doors shall be one leaf opening outward and provided with brass automatic inside latch with touchplate to operate by the pressure of the smallest child.

The entire escape shall be manufactured in assembled sections about 7 ft. high, with an angle ring at the top and bottom of each section, shall be set up at the factory and riveted permanently together to insure proper fitting, and each section properly marked to correspond with a setting diagram to be furnished by manufacturers. There shall be no projections of any sort on the upper surface of slide; all rivets being recessed and all edges of sheets ground smooth.

Entire escape, except slide, which is galvanized, shall have one coat of best mineral paint at factory, and sufficient additional paint furnished to give a second coat after erection.

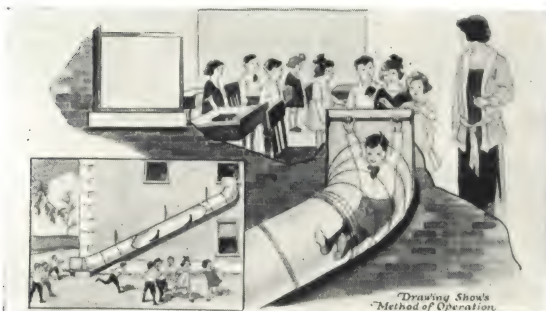
For Exterior Installations Add These Specifications

—The roof shall be conical in shape of No. 16 gauge projecting not less than 3 in. beyond cylinder. Runway floor shall be of perforated sheet steel not less than No. 14 gauge on suitable angle framing with an enclosed vestibule provided at each entrance with entrance doors in two leaves each, arranged to swing in, and provided with springs. Near the second or third story floor line and for each two stories above this point, the escape shall be securely braced to the building by a band and tie rod extending through wall and a strut of 3-in. inside diameter pipe with cast iron bearing shoes for cylinder and wall.

Note: Hospital escape is 7 ft. in diameter. Material sizes given are sufficient for a 65-ft. high escape, 5 ft. in diameter. On higher inside installations, brackets are provided to rest on floor construction. On higher exterior installations, heavier sheet steel is used. Escape weighs 100 lbs. a vertical foot in the 5-ft. diameter.

TUBULAR ESCAPE

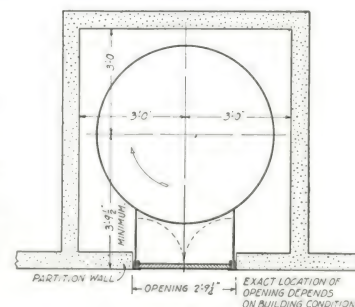
ENTRANCE PLAN FOR LOGAN SPIRAL



Tubular Slide Fire Escape (Patented)

Tested by Underwriters' Laboratories, Inc., approved and listed as Standard

The drawing at right shows plan of entrance to Logan Spiral Escape. Logan Spiral is not an experiment. Thousands of installations have been made and found more than satisfactory. Note particularly; no dizziness, no heating of trouser seat, no increase in momentum—even on tall buildings. Write for catalog giving layouts and dimension plans.



Plan of Entrance
Logan Spiral Slide Escape

Specifications—Tubular Slide

School Type—Entrance to the escape to be 30 in. wide, 42 in. high; sections to be 30 in. in diameter and not more than 38 in. long and have 1½x1½-in. angle iron rings riveted to each end for joining sections. Angle iron rings to be bolted together with ¾x1 in. bolts, udelte finish. A channel iron band is placed over the top of the angle iron rings to make the joint watertight. The elbow shall have a throat radius of 8 in. The easement or lower end breaks from a 30° angle to horizontal, and is about 6 ft. long; it flares from a 30-in. diameter to oval shape 36 in. high by 30 in. wide. The incline of the tube is about 30°.

Entrance on inside of building to be closed with double doors 15 in.

wide, 42 in. high, weatherstripped, equipped with panic bolt hardware, operated with push bars on each door, doors to swing into entrance of the escape. A horizontal swing bar shall be placed near the top of the entrance, just outside the doors. Swing bar to be ¾ in. in diameter.

Hospital Type—Same as school type, except change in measurements as specified below.

Diameter of tube to be 36 in. Entrance shall be 40 in. wide, 45 in. high at inside wall line of building and flare to 36 in. diameter at the outer extremity. Elbow shall have a throat radius of 40 in. The easement, or lower end, breaks from 38° angle to horizontal and is about 9 ft. long, rests on a concrete base. The incline of the tube is about 38° to horizontal.

Complete detailed specifications on request.

VULCAN RAIL & CONSTRUCTION COMPANY

OFFICE AND WORKS

Grand Street and Garrison Avenue, MASPETH, N. Y.

VULCAN PIPE AND BRIDGE RAILINGS AND FENCES



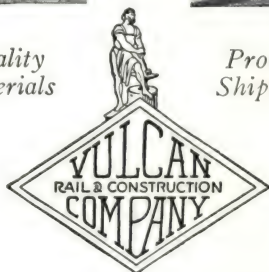
Boardwalk Railing with Lamp Posts



Typical Bridge Railing

*Quality
Materials*

*Prompt
Shipment*



PIPE RAILINGS, FENCES and SPECIAL CONSTRUCTION for:

Auditoriums

Sewage Treatment

Boardwalks

Works

Bridges

Stadia

Elevated Structures

Stairs

Grandstands

Theatres

Prisons

Warehouses, etc.

SPECIAL PIPE WORK for:

Fur Storage Racks

Table Supports

Platform Shelters

Turnstiles, etc.

STAIRS, LADDERS, etc., with RAILINGS for:

Coal Breakers

Dams

Subways

Power Plants

Hydroelectric Plants

Also Vulcan "All-Steel" Underwriters' Fire Doors for protection of corridors and partition openings in storage warehouses.



Pipe Railing in Power House



Pipe Railing on Concrete Stairs



Picket Fence, Park Avenue, New York, N. Y.



Pipe Railing in Sewage Disposal Plant

Vulcan Pipe Railings

First quality pipe with Vulcan Standard Malleable Iron Railing Fittings and Vulcan Standard Cast Iron Flanges are used in the manufacture of all Vulcan Pipe Railings. Due to the great variety of fittings, flanges, etc., which are carried in stock for fabrication, we are able to meet many different construction conditions.

Vulcan Table Supports

Vulcan Table and Laboratory Supports can be furnished in many designs to meet special requirements. They are all sturdy in construction and are well suited to applications where strength, accuracy and durability are demanded.



Pipe Rail on Double Concrete Stairs

Vulcan Bridge Railings

Vulcan Standard Bridge Railings are constructed of various combinations of pipe, fittings, bars (round and square), flats, channels, angles, etc. As its basic principle, the present day design of bridge railings has pipe for the rails and posts with filling of round or square pickets or other structural shapes. The designs offer simplicity and strength together with more resistance to action of elements and maintenance cost is therefore reduced to a minimum.

Vulcan designs vary from the simple type to the more elaborate designs introducing cast iron posts with rings and other shapes into the railing panels. An almost inexhaustible number of combinations can be made of these shapes, thereby assuring unlimited selectivity.



Bridge Railing on Roosevelt Avenue Bridge Over Flushing River, New York, N. Y.

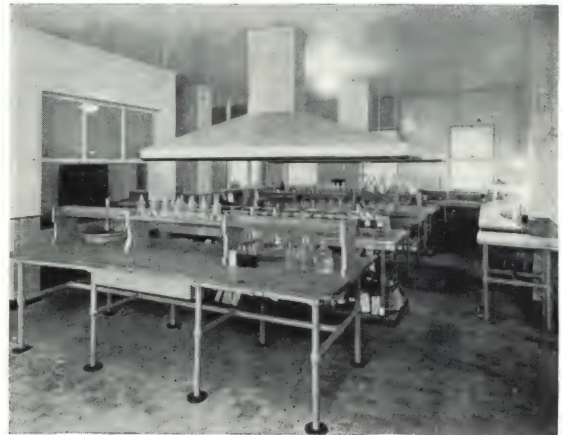
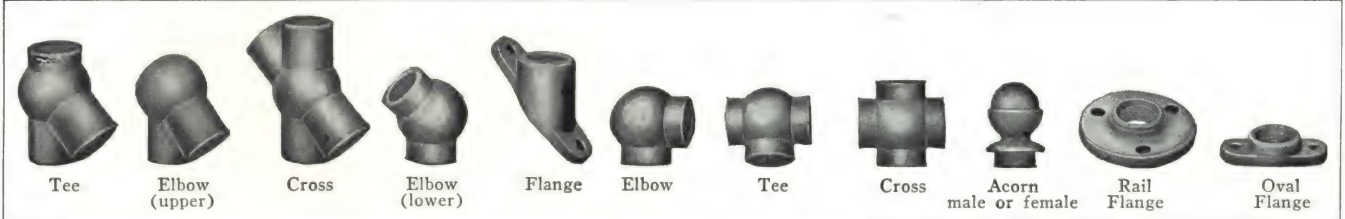


Table Supports in a Laboratory



"Vulcan" Standard Railing Fittings

VULCAN FACILITIES AND SERVICE**Facilities and Service**

Our plant at Maspeth, N. Y., is fully equipped to manufacture railing products, having a trained force of skilled and experienced workmen, which insures prompt and efficient execution of all orders. It is located on main line railroad and has a private siding.

We offer to engineers the service of our Engineering Department to advise or aid them in problems involving the use of railing or pipe and fittings in construction work.

Specification Information—Complete information, including estimates and preliminary designs for any of the products illustrated, or listed under products, will be promptly supplied on request. Catalogue sent on application.

Information and Literature

Detailed information relative to standard bridge and pipe railing designs, as well as special designs to suit architects' and engineers' requirements, will be submitted on request.

When requesting estimates it is suggested that inquiries be accompanied by blue prints or sketches of requirements showing full dimensions and all possible information on size of pipe, type of fitting, finish, etc. Inquiries for pipe railings should mention the number of posts required and the spacing between posts; also the number of horizontal rails, and the method of anchorage to foundation or support.

THE DUPLEX HANGER CO.

East 53rd Street and Lakeside Avenue
CLEVELAND, OHIO

BRANCH OFFICES

BOSTON, MASS., 88 Broad Street
CHICAGO, ILL., 6310 Wentworth Avenue

NEW ORLEANS, LA., 3728 So. Prieur Street
NEW YORK, N. Y., 16 Warren Street

PHILADELPHIA, PA., 1316 No. 18th Street
PORTLAND, ORE., 316 S. E. Madison Street

Products

"Duplex" JOIST, WALL, CONCRETE BLOCK and I-BEAM HANGER; "Duplex" POST CAPS, POST BASES, WALL PLATES and WALL BOXES, for warehouses, factories, heavy mill construction and all other wood constructed buildings.

For Duplex Incinerators, see File Index.

When Specifying

"Duplex" hangers and post caps are designed with a large factor of safety to carry timbers for which they are intended. If architects and engineers, when using hangers and post caps, specify "Duplex," proper hangers and post caps for the timbers will be furnished. Specifications are to be included in carpentry specifications.

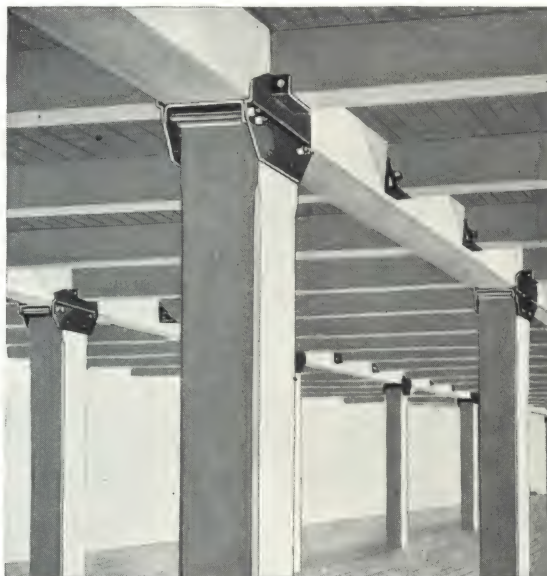
DUPLEX POST CAPS, BASES AND HANGERS—THE QUALITY LINE FOR HEAVY MILL CONSTRUCTION



"Duplex" Joist Hanger

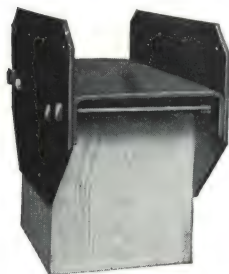
Economical hanger for timber framing. Made of malleable iron and every hanger is thoroughly tested.

"Duplex" Joist Hangers reduce the shrinkage of joists to a minimum



R & L Joist Hanger

For the heaviest type of mill construction. By using this type of hanger, the entire building is tied together laterally. No other method of construction does this. Made in two parts and can be adjusted to fit the various timbers for which they are intended

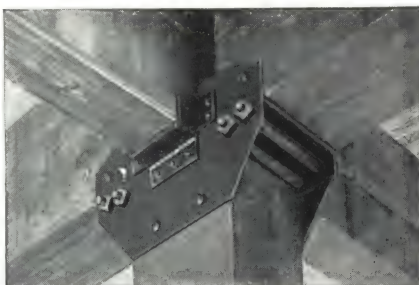


Two-way Construction

unanimous in declaring it to be an ideal design for rigid construction. Tests have fully proven the great strength of this design and that it is not possible to break the cap when even more than six times the ultimate safe load of the timber is applied. These caps are furnished for 1-way, 2-way, 3-way and 4-way construction and may be had for timbers larger than the post.

"Duplex" Steel Post Caps

"Duplex" Post Caps are made of mild, open hearth steel and consist of three pieces: a bearing bracket and two side plates bolted together with four heavy bolts. Engineers who have investigated and used this cap are



Four-way Construction



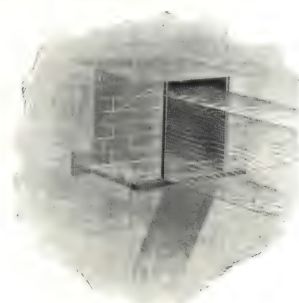
"Duplex" Steel Post Base

Made of steel plates and angles to fit the post. More economical than cast iron plates



"Duplex" Wall Hanger, Extra Heavy

"Underwriters' Type" steel wall hanger for heavy mill construction. Carries timbers clear of the wall and distributes the load perfectly over the bearing surface of the masonry. Furnished for standard and extra heavy construction



"Duplex" Wall Box

The "Duplex" Wall Box is designed for anchoring timber beams and girders in brick and masonry walls and as a protection against dry rot. A steel box is riveted to the Duplex Wall Plate, providing for a free circulation of air around the timber. Furnished with a cover plate if required



"Duplex" Block Wall Hanger

This hanger for concrete block construction is made with a larger bearing plate than our ordinary wall hangers so as to distribute the load over a greater area of the concrete block. Very practical where it becomes necessary to frame joists into old brick walls or party walls. Avoids the cutting of a large hole

THE IDEAL HANGER COMPANY

Manufacturers of Timber Fittings for Mill Type Buildings

1270 East 53rd Street
CLEVELAND, OHIO

Products

IDEAL JOIST HANGERS:

Wall Hangers, Wall Boxes and Metal Lumber Hangers.

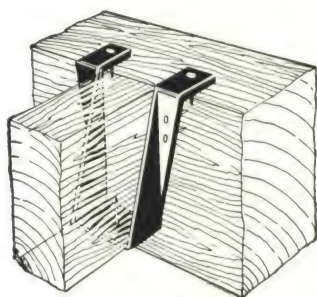
POST CAPS.

POST BASES.

Also Barn Framing Fittings.

Service

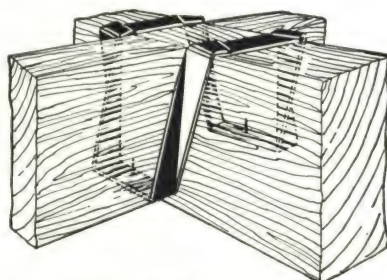
Ideal post caps, Ideal hangers and other Ideal products are made of the best material obtainable by competent workmen on modern machines. Prompt shipments are made from stock. Estimates and quotations cheerfully furnished and designs submitted by engineers who are specialists in timber construction.



Ideal Style "A" Hanger

A single hanger of the best grade open-hearth steel, formed cold to shape best adapted to framing timbers of every size. Fastens to timber with spike or lag screw.

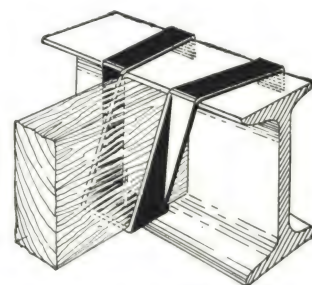
2x6-in. up to 12x16-in. hangers in stock



Ideal Style "B" Hanger

A double hanger for use where joists frame opposite each other on a wood girder or I-beam. Made of two single hangers with riveted strap connections, the strongest possible construction.

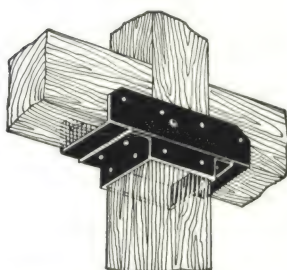
2x6-in. up to 12x16-in. hangers in stock



Ideal Style "C" Hanger

Where timbers are framed to I-beams, this hanger with the arms crossing the top of the girder provides safest and most economical construction. Also used with wood girders.

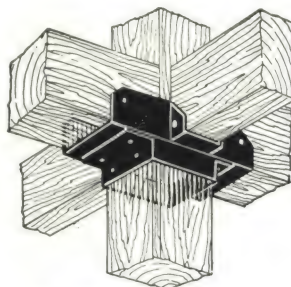
2x6-in. up to 12x16-in. hangers in stock



Ideal Steel Post Cap, No. 2

Easily installed—no framing necessary. Channel of open-hearth steel riveted to socket, provides rigid construction.

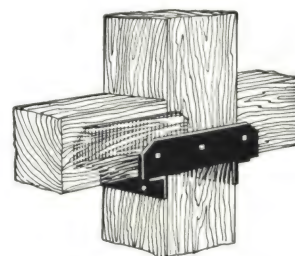
6x6-in. up to 16x16-in. post caps in stock



**Ideal Steel Post Cap, No. 2
(Showing 3 and 4-way Construction)**

Built with the same attention to engineering standards as other Ideal Framing Products.

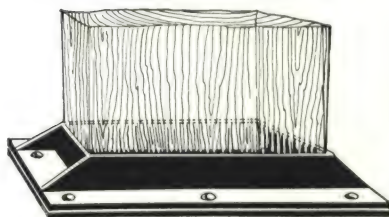
The brackets on the side of the cap are riveted thereon to carry the beams framing in at the side, and are placed so the girder and beams will be flush on top, unless otherwise noted



Ideal Steel Post Cap, No. 3

The strongest light weight post cap made. Meets every demand for framing posts and girders under moderate loads.

6x6-in. up to 12x16-in. post caps in stock



Ideal Post Bases

A heavy steel plate, with angles riveted thereon, furnishes the best possible socket for timber posts.

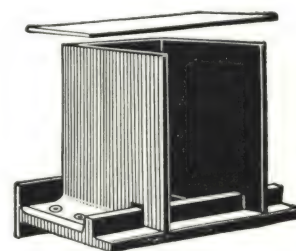
6x6-in. up to 16x16-in. in stock



Wall Plates

One-piece construction of malleable iron, far superior to cast iron. Note features of superiority in use.

Carried in stock in all sizes



Wall Box

To anchor beams in brick walls, and to protect them against dry rot. Malleable plate and steel box riveted thereto.

In stock in all sizes

ACORN WIRE AND IRON WORKS

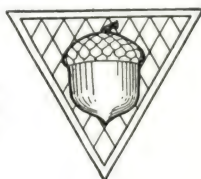
Wire Mesh Enclosure Panels, Cashier Cages, Wire Mesh Window Guards and Collapsible Folding Gates

TELEPHONE
Normal 1895

5906 Lowe Avenue
CHICAGO, ILL.

Products

Manufacturers of ACORN WIRE MESH ENCLOSURE PANELS; CAGES for Banks and Offices; WIRE MESH WINDOW GUARDS; COLLAPSIBLE FOLDING GATES; SANI-ROBE COAT and HAT RACKS.



Also manufacturers of Skylight Guards, Machinery Guards; Elevator Enclosures; Wire Signs; and Miscellaneous Wire Mesh Work.

Complete catalogue sent on request.

NO. 130 ACORN WIRE MESH ENCLOSURE PANELS

Description

There is a difference between Acorn Standardized Enclosure Panels and just wire mesh partition.

No. 130 Acorn Enclosure Panels are built in standardized units. Each section or door is a complete unit and is interchangeable with every other unit. Additional units to match may be ordered at any time. The installation may be rearranged at any time by unskilled labor.

Architects who definitely specify the type and quality of partitions desired will relieve their clients of the burden of purchasing them later, which, for want of knowledge, is usually done in a promiscuous manner.

Construction and Specification Data—Architects may specify Acorn Standard Enclosure Panels by number, indicating type of doors and service windows desired.

Height—7, 8, 9 and 10 ft. carried in stock; other heights to order.

Width of Panels—Standard panels are 5 ft. wide.

Special width panels furnished to fill in where necessary.

Door Sections—Standard door sections are 3 ft., 3 ft. 6 in., and 4 ft. wide, and of height to match partition. Special widths when necessary. Doors are 6 ft. 6 in. high with transom panel overhead. Sliding doors up to 4 ft. wide, made self-closing without extra cost.

Wire and Mesh—No. 10 ($\frac{1}{8}$ in.) steel wire, $1\frac{1}{2}$ -in. diamond mesh. Entire web in one piece with wires passing through center stiffening bar, eliminating unnecessary joints.

Framing and Stiffening Bar—Framing, $1\frac{1}{2}$ -in. steel channel. Center stiffening bar, $1\frac{3}{8}$ -in. steel channel securely riveted to frame.

Capping or Top Stiffening Bar— $2\frac{1}{8}$ -in. steel channel fastened to panels with U bolts, greatly simplifies installation.

Corner Posts— 1×1 -in. steel angle with floor socket. This permits the making of corner at any intersection.

Cut-outs and Special Panels—Cut-outs, or special size or shape panels furnished to meet special conditions.

Bracing—While capping or top stiffening bars will carry a reasonably long run of partition, simple methods of bracing can be arranged.

General Hardware—All hardware that is subject to strain is made of malleable iron or wrought steel to prevent breaking. The balance is made of soft gray iron.

Locks—Heavy bronze locks, operated with cylinder from outside and recessed knob from inside. Master-keyed locks will be furnished at slight additional cost. Doors equipped with a hasp for padlock may be had at a lower cost.

Hangers—All sliding doors equipped with ball bearing hangers.

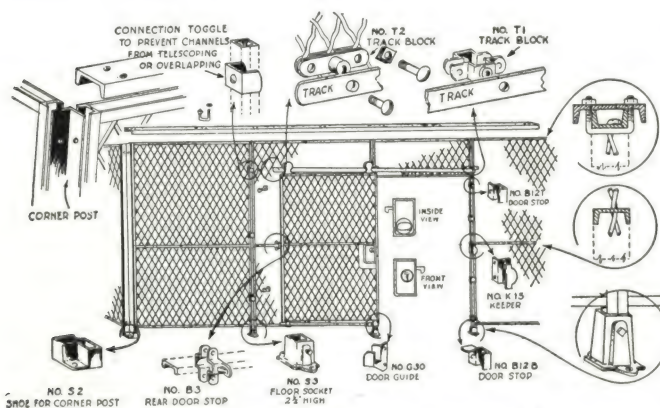
Floor Sockets— $2\frac{1}{2}$ in. high to allow for adjustment where floors are uneven.

Paint—Standard factory green unless otherwise specified. Special colors may be had at slight additional cost.

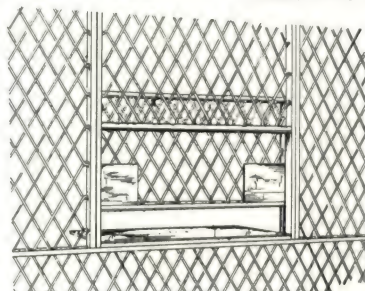
Installation—Many original and exclusive features make Acorn Partitions extremely easy to erect. No experience or special skill is necessary. Diagram and complete setting instructions sent with each order.



No. 130 Acorn Unit Wire Mesh Enclosure Panels



Details of No. 130 Acorn Enclosure Panels and Doors



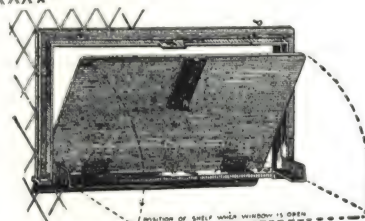
No. 136

Acorn Lift-up Service Window, with or Without Shelf

Standard size 24×15 ins. A very practical and popular type of service window. Locked with spring catches in closed and open positions. In ordering specify whether shelf is required. Standard shelf 24×12 ins. Unless shelf is specified window will be furnished without shelf.

No. 135-A and 135-B Combination Window and Shelf

Acorn Combination service window is fitted with metal shelf extending about 2 ins. on outside and 9 and 15 ins. respectively on inside. Shelf swings up thereby closing the opening, and is locked with a shove bolt from inside. Can be installed before shipment or after partition is in place.



No. 135-A. Size 15 in. wide, 9 in. high
No. 135-B. Size 24 in. wide, 15 in. high

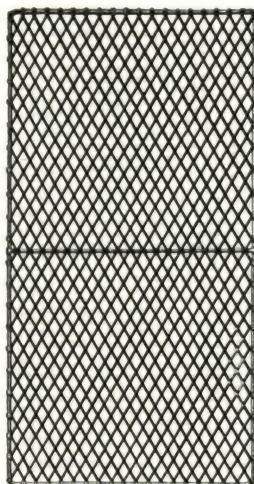
WINDOW GUARDS

Acorn Wire Mesh Window Guards

They protect glass against breakage and prevent entrance by stealth. They also prevent dishonest employees from passing valuable tools, etc., through the windows to confederates outside. They permit the windows to be opened for ventilation with safety. Send for catalogue.

Material Specifications—Made of three principal specifications: 1½-in. mesh, No. 12 wire; 1½-in. mesh, No. 10 wire, and 2-in. mesh, No. 8 wire. No. 10 wire, 1½-in. mesh is most used, being the meeting point between burglary and glass protection. Guards can be furnished in any wire desired.

H-5 hinges and H-6 hasps, of malleable iron, are recommended. They afford an excellent means of fastening and are adaptable to any style window frame by reversing same where necessary. Hinges are fastened to window by lag screws making it difficult to remove from outside. Hasps are locked to a heavy screw-eye which can not be removed when padlock is in place.

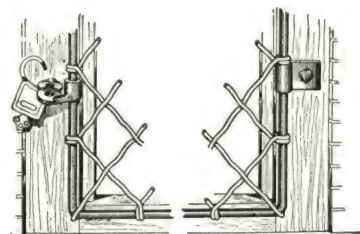


No. 121 Window Guard

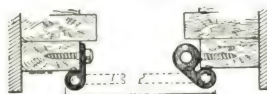
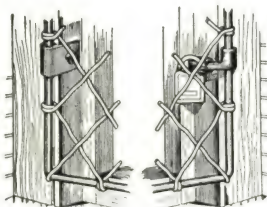
Methods of Installing—

Where guards are used principally for burglar protection, hinged Type "A" is recommended. The hinges are fastened to window frame by means of lag screws, making it difficult to remove from outside.

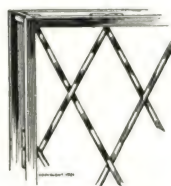
When burglar protection is not an important factor, and when it is desirable to attach the guards from outside, hinged Type "B" is recommended. In this case the lag screws are exposed to the outside.



Hinged Type B



H5 Hinge H6 Hasp

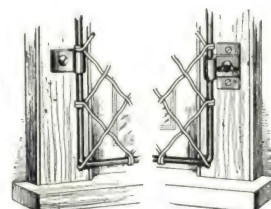


No. 122 Window Guard

Channel frame varying from ¾ to 1 in. wide. These are satisfactory when designed to fit into opening, but are not recommended when outer grooved edge is exposed to view

No. 121 Window Guard Hinged, Type A

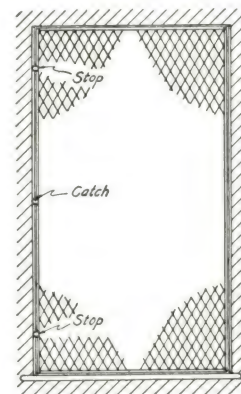
Round steel frame of ⅝ or ¾-in. diameter according to size of guard. Also made in stationary type



Type K

A popular type for protecting Gymnasium Windows or other windows where inside protection is desired.

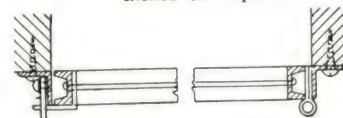
Type "K" Hinged Guards are fastened on one side with H5 Hinges, and other side is held in place with thumb nuts.



No. 122-6

Carries 1-in. channel frame. No. 122-6 Guard is recommended because of its greater rigidity but, where an inexpensive guard is required, the No. 121 Type K will be found thoroughly satisfactory.

Quotations gladly furnished on request



DETAIL OF GUARD NO. 122-6 SET AGAINST FACE OF WINDOW FRAME

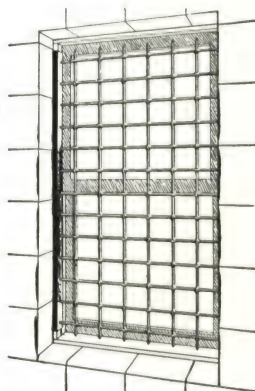
ACORN
WELDED WEAVE

A new and better, yet inexpensive type window grille, designed for homes, public buildings, commercial buildings, etc.

Welded-Weave is made from ⅝-in. round cold drawn steel, interwoven and electrically welded into a solid unit.

These grilles are a combination of beauty and strength, interposing a strong network of steel against any attempted forced entrance.

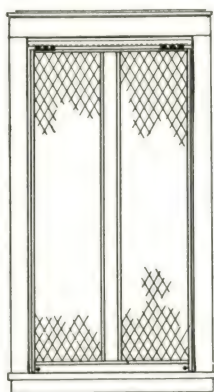
Welded - Weave is generally made in 4, 5, 6, and 7-in. spacings, but may be had in other spacings, either square or oblong openings, to suit architects' requirements.



GYMNASIUM WINDOW GUARDS

While the several types of gymnasium window guards shown are recommended because of their simplicity in operation, many other types can be furnished when desired.

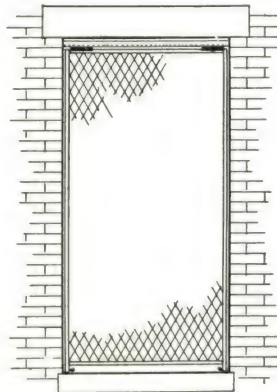
Send for catalogue if interested.



No. 127

No. 127—Carrying channel frame and is hinged at top with slot for window pole and suitable catches at bottom. This arrangement is very desirable because windows may be opened without swinging guard

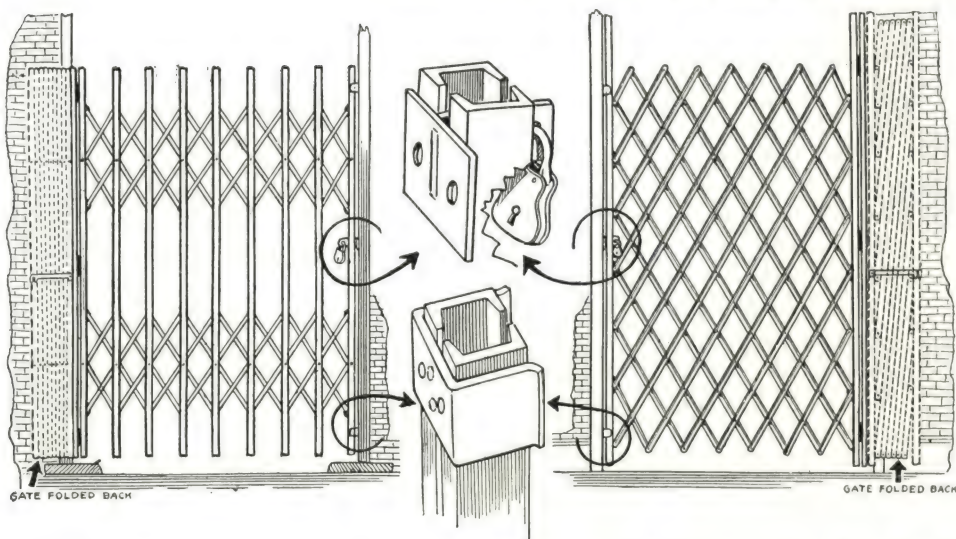
Note: No. 10 wire, 1½-in. diamond mesh is recommended for gymnasium window guards. Finished in green or black enamel. Specify by number and state whether fastened to brick or wood



No. 128

No. 128—Hinged at top and suitable catches at bottom. Windows readily accessible for opening or washing

COLLAPSIBLE FOLDING GATES FOR EVERY PURPOSE



No. 157 Acorn Folding Gate, Fig. 19

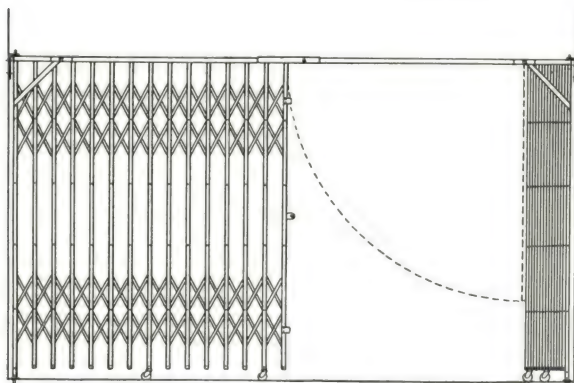
The above illustrates No. 157 Acorn Collapsible Folding Gate in extended and folded position. Please note that this type of gate remains the same height in both the extended and folded positions. These are usually made of steel but can also be furnished in non-ferrous metals. Prices gladly quoted on request

Locking Acorn Gates

The above illustrates method of locking Acorn Collapsible Folding Gates with padlocks. If cylinder lock is desired please refer to next page for illustration and description

No. 156 Acorn Folding Gate, Fig. 20

No. 156 Acorn Folding Gates are used for many purposes. Please note that gate is somewhat lower when in extended position. When ordering be sure that there is sufficient room to accommodate gate when in folded position. It is always advisable, when in doubt, to state both headroom and height of gate wanted. These gates are usually made of steel but can also be furnished in non-ferrous metals. Prices on application

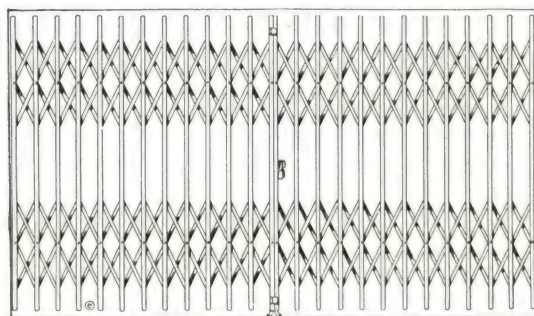


No. 157 Folding Gate, Fig. 21, Double Type

This pattern is supported by brace across the top which is securely held in place when Gates are locked.

Can be used in connection with wall pocket or cabinet. See Fig. 27.

Specify whether Indestructo Cylinder Lock or Hasp is desired. (Unless otherwise specified Hasp will be furnished)



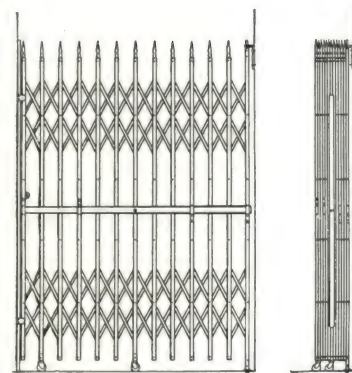
No. 157 Folding Gate, Fig. 11

May be used in corridors of schools, banks, office buildings, or public institutions. Can be used with or without cabinet.

Ordinarily, rigidity is not entirely necessary and, therefore, a track is not essential but whenever it is to withstand abuse, an overhead track or brace should be included.

May be furnished with ornamental picket top if desired.

Specify by number—157, Fig. 11, and state whether hasp or cylinder lock is required.



No. 157A Folding Gate, Fig. 22, Single Type

This pattern is reinforced with pivoted brace at center. Where rigidity is not essential brace may be omitted if desired.

Note for this type of brace the width of Gate should not exceed the height.

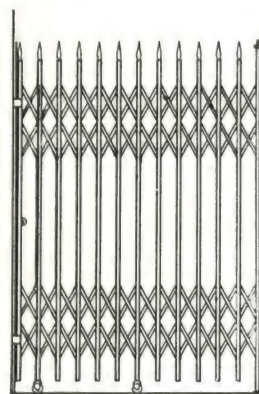
Can be used in connection with wall pocket or cabinet. See Fig. 27.

Specify whether Indestructo Cylinder Lock or Hasp is desired. (Unless otherwise specified Hasp will be furnished).

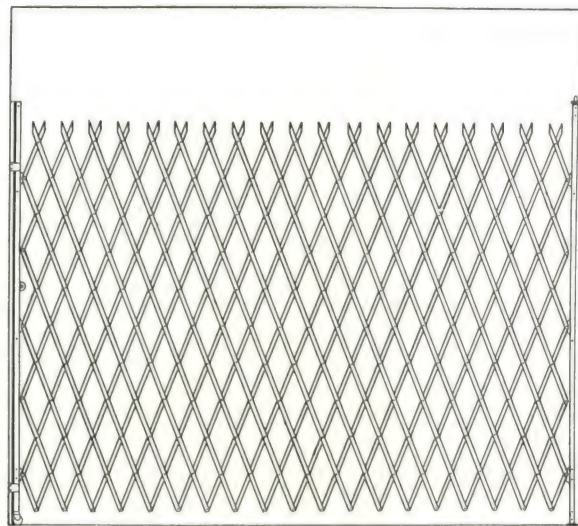
Right:

Acorn Ornamental Picket Top for No. 157A Gates

These tops are made of malleable iron. To guard against breakage be sure to specify malleable iron



No. 157A Folding Gate, Single Type, Fig. 29



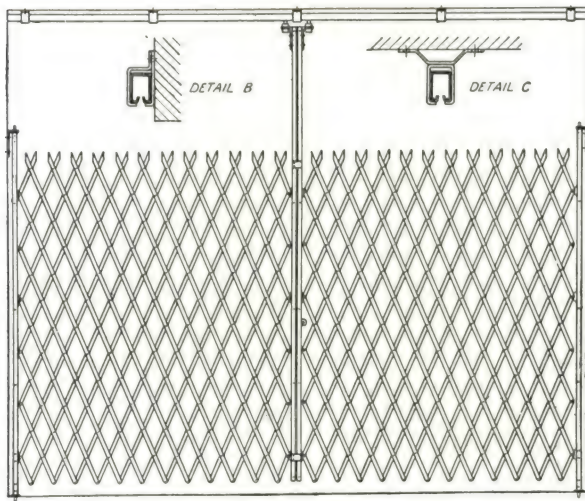
No. 156A Folding Gate, Fig. 24, Single Type

This pattern can ordinarily be used up to 8 ft. 0 in. wide without brace. For openings more than 10 ft. 0 in. wide Double Type Gate with proper bracing or overhead track is recommended.

Can be used in connection with wall pocket or cabinet. See Fig. 27.

Specify whether Indestructo Cylinder Lock or Hasp is desired. (Unless otherwise specified Hasp will be furnished).

Can be furnished without pointed tops if desired



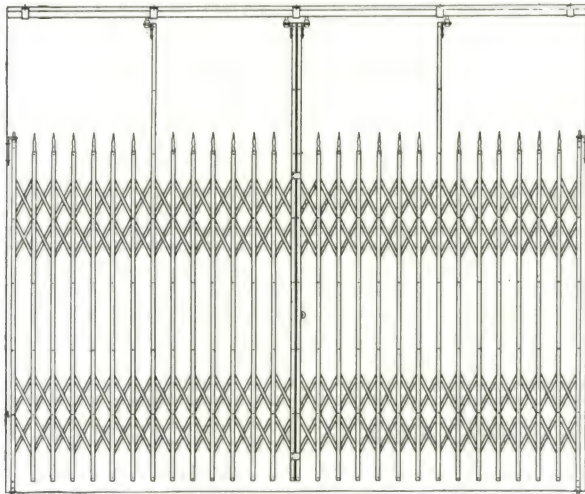
No. 156A Folding Gate, Fig. 26, Double Type

This pattern is supported by overhead track. Two details illustrating overhead track are shown above but other types of track can be furnished where desired.

Gates can be furnished with or without floor bolts at center.

Specify whether Indestructo Cylinder Lock or Hasp is desired. (Unless otherwise specified Hasp will be furnished).

Can be furnished without pointed tops if desired



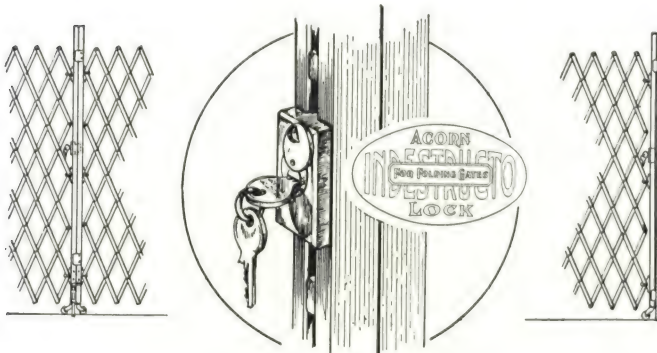
No. 157A Folding Gate, Fig. 25, Double Type

This pattern is supported by overhead track. (See Fig. 26 for details showing track.)

Specify whether Indestructo Cylinder Lock or Hasp is desired. (Unless otherwise specified Hasp will be furnished).

To prevent breakage malleable iron picket tops should be specified.

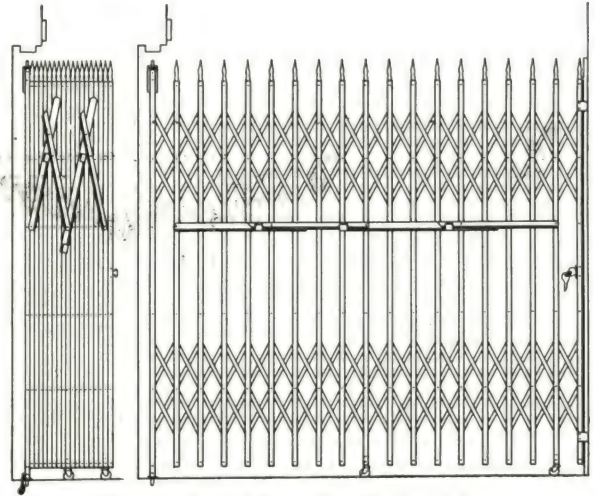
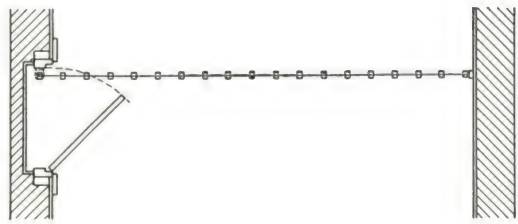
Can be furnished without ornamental picket tops if desired



Indestructo Cylinder Lock

(Patented 1933)

The Acorn Indestructo Folding Gate Lock is an added safety feature which can now be obtained with Acorn Collapsible Folding Gates. It does away with the necessity of a padlock, eliminating the last undesirable feature. This lock is safe, practical and economical. It is accessible by key from either side and is unbreakable



No. 157A Folding Gate, Fig. 35, Single Type

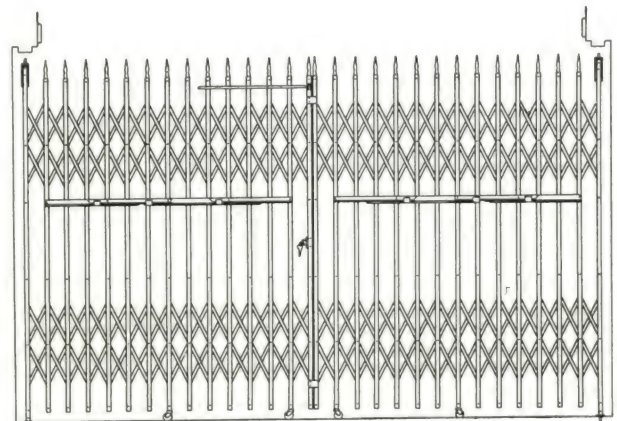
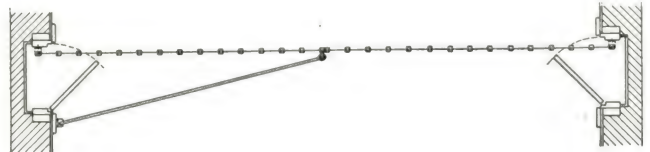
Unless otherwise specified, Gates under 5 ft. wide will not include jack-knife brace.

Gates 5 ft. or over include jack-knife brace unless otherwise specified. The above is an excellent arrangement which permits the folding of Gates into a wall pocket or cabinet when not in use. May be used without cabinet if desired.

Either Type No. 156 or No. 157 can be used in this arrangement. Specify whether Indestructo Cylinder Lock or Hasp is desired. (Unless otherwise specified Hasp will be furnished).

To prevent breakage malleable iron picket tops should be specified.

Can be furnished without ornamental picket tops if desired



No. 157A Folding Gate, Fig. 27, Double Type

This pattern is reinforced with jack-knife brace through center. The above is an excellent arrangement which permits the folding of Gates into a wall pocket or cabinet when not in use. May be used without cabinet if desired.

Either Type No. 156 or No. 157 can be used in this arrangement. Specify whether Indestructo Cylinder Lock or Hasp is desired. (Unless otherwise specified Hasp will be furnished).

To prevent breakage malleable iron picket tops should be specified.

Can be furnished without ornamental picket tops if desired

THE CONSOLIDATED EXPANDED METAL COMPANIES

Steelcrete Diamond Mesh Window Guards and Partitions

WHEELING, W. VA.

SALES OFFICES AND WAREHOUSES

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FOREIGN SALES OFFICE, 330 West 42nd Street, NEW YORK, N. Y.

For Steelcrete Concrete Reinforcing Mesh, and Steelcrete Bank Vault Construction, see File Index

STEELCRETE SYSTEM OF DIAMOND MESH GRILLE WORK

Modern, Economical and Pleasing to the Eye



Steelcrete Diamond Mesh Partition

These partitions are strong, economical and pleasing to the eye



Steelcrete Window Guard

Steelcrete Window Guards are more pleasing than crimped window guards and cost no more

The Steelcrete System of diamond mesh grille work is specified and used in many modern post offices. This system of open mesh grille work affords a wide selection of sizes of diamond openings and weights of mesh. Safe-T-Mesh is used and is guaranteed absolutely free from sharp edges. This is a new development in the manufacture of expanded metal, which has adapted that material to requirements of the finest buildings.

The framing material consists of hollow tubular sections of heavy cold formed steel, made commercially

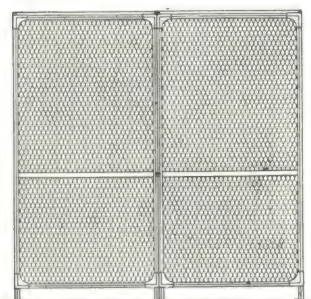


SAFE-T-MESH

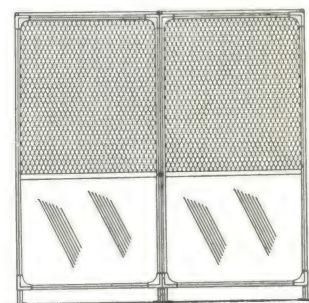
practical through recent improvements in the art of cold forming.

Behind this special construction is a nationalized service, two hundred responsible ornamental iron shops scattered throughout the United States (also some in South America, Europe and the Far East).

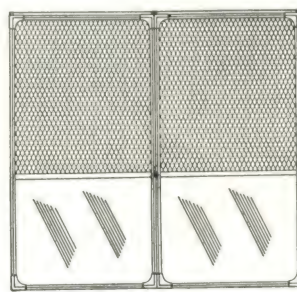
Write direct to the manufacturer, THE CONSOLIDATED EXPANDED METAL COMPANIES, Wheeling, West Virginia, for samples, recommended specifications and the names of fabricating shops near you.



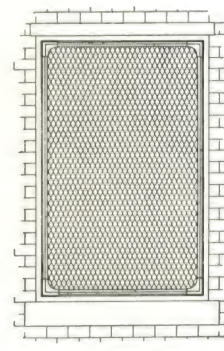
Type A Partition



Type B Partition



Type D Partition



Window Guard

ESTABLISHED 1846

CORNELL IRON WORKS, INC.TELEPHONE
Stillwell 4-3880,
3881, 3882

3610 to 3630 13th Street, LONG ISLAND CITY, N. Y.

For Local Representatives in Principal Cities, Consult Telephone Book or Write Home Office for Address
For Cornell Rolling Doors and Cornell Float-over Doors, see File Index**Operation**

Cornell Rolling Grilles and Gates operate like rolling doors, but are used to give security *without blocking light, air or vision.* Designed



Complete Store Front, H & D Folsom Arms Co., N. Y.

Protected by Cornell Rolling Grilles

for closure of all types of openings. Handle, hand chain and gear, crank, or remote control motor operated.

Uses

For exterior or interior openings where light

and air are required but intrusion is prohibited.

For store fronts, entrances, gateways, counters, windows, etc., where folding gates or permanent, sectional or knock-down grilles or mesh are used.

For residence windows and doors, garden gates, etc., to prevent trespassing against person and property.

Entrances to cages and compartments, news stands and markets. Daytime protection of vaults, bank teller and other partitions; fur, jewelry, bars and storage or display rooms. Front or rear of auto trucks. Corridors and stairs in schools and public buildings. Amusement park and sports areas.

Elevator shafts, wharves, piers, warehouses, platforms, power plants, factories and for innumerable other buildings and purposes.

Description

Cornell Rolling Grilles consist of rolled and pressed steel bars joined together with strong ornamental links and with straight links in the side guides. They coil neatly on a horizontal, overhead shaft and are accurately counterbalanced at all points by tempered springs to afford easy, even operation, and will stand in any position.

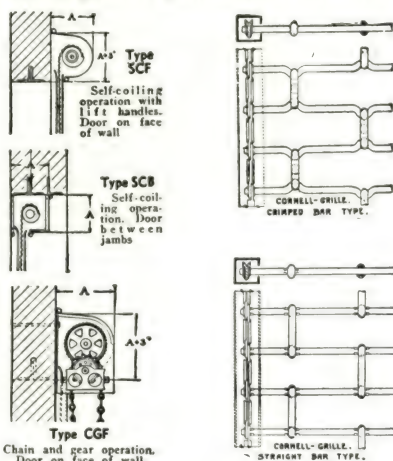
Made of bronze, aluminum or stainless steel.

Grilles function and operate in much the same manner as Cornell Rolling Steel Shutters and Doors, but with more speed and ease because of lighter weight and open construction. There is

CORNELL
ROLLING GRILLES



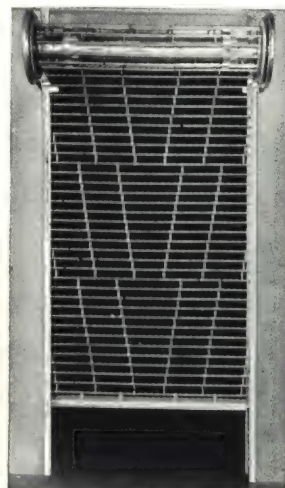
Aluminum Cornell Rolling Grilles Protect Entrances of Bloomingdale's Department Store, New York



Above left: A = 14 in. up to 7-ft. opening height add 1 in. for each 3 ft. of additional height



Polished Aluminum Counter Rolling Grilles



Diagonal Link Design D1 (With hood removed)

no wear on rivets, rollers or small parts—the entire weight is supported by the two large journals of the overhead shaft. Will last for years without maintenance.



Straight Bar Type Grille. Factory, Kokomo, Ind.

Special operation and control can be designed for residences, banks and other buildings for protection of doors and windows.

Dimensions—The grille travels in two vertical, cold rolled channel-shaped guides about $1\frac{1}{4} \times 1\frac{1}{4}$ ins., designed to resist a push of 5 tons to the foot of height.

Grille, when entirely coiled on shaft, is 14 to 18 ins. in diameter, depending on height of opening.

Locking—Equipped with special locking device, cylinder or padlock, located at convenient height or at base of grille.

Takes No Useful Space—Ordinary installations are made on face of inside wall. Can be made to coil under lintel, between jambs, and between ceiling and floor above, and within other hidden or built-in areas.

Size—Will meet practically any unusual requirement. Cornell Rolling Grilles are recommended up to 30 ft. in width and height.

Since 1846

CORNELL IRON WORKS, INC. is America's oldest manufacturer of rolling doors (see index for pages featuring rolling doors). The Cornell Rolling Grille is based on the established principles of these famous products, many of which are still in first class repair after more than fifty years of active use.

Service and Booklets

Dimension drawings, etc., will be prepared to suit requirements. Our Department of Engineering is at your disposal for competent advice or suggestion with no obligations. Booklet and further facts upon request.



Motor Operated Steel Rolling Grille, 29x15 Ft., Rochester, N. Y.

KENTUCKY METAL PRODUCTS CO.

INCORPORATED

Woven Wire Partitions, Cages, Bank and Office Grilles,
Wire Window Guards, Screen Door Grilles

LOUISVILLE, KY.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

KENTUCKY WIRE PARTITION and ENCLOSURES for Industrial Stockrooms, Toolrooms, Machine-Shops, Shop Divisions, etc.; CAGES for Banks and Offices; BANK GRILLES; BULLET-PROOF WIRE WORK; WIRE PANELS and DOORS; WINDOW GUARDS; RADIATOR GUARDS; SKY-LIGHT GUARDS; SCREEN DOOR GRILLES; WIRE MESH of every description.

Kentucky Wire Products

Kentucky Products are designed to meet the demands of the most artistic office or bank as well as the rough shop or factory, and are constructed to meet the approval of the leading architects of today. Wire work is very artistic as well as practical. Executives and architects are appreciating its value as an aid to increased efficiency as it makes interiors visible at all times. Open mesh partitions are a great aid to ventilation and heating.

Any Metal—Kentucky Wire Products can be made in steel, copper, brass, bronze, etc.

Any Finish—Can be furnished in painted, enameled, lacquered, galvanized, or electro-plated.

Kentucky Wire Partitions

Wire and Mesh— $1\frac{1}{2}$ -in. diamond mesh, No. 10 ($\frac{1}{8}$ -in.) wire of best open hearth steel. Web of each panel in one piece with double channel stiffening bar at center.

Frame— $1 \times \frac{1}{2}$ -in. standard channel.

Top Reinforcing Bar— $1\frac{1}{2} \times \frac{1}{2}$ -in. channel.

Floor Sockets—Cast iron, made to give adjustment for uneven floors.

Locks—Yale, Corbin, Sargent, etc.

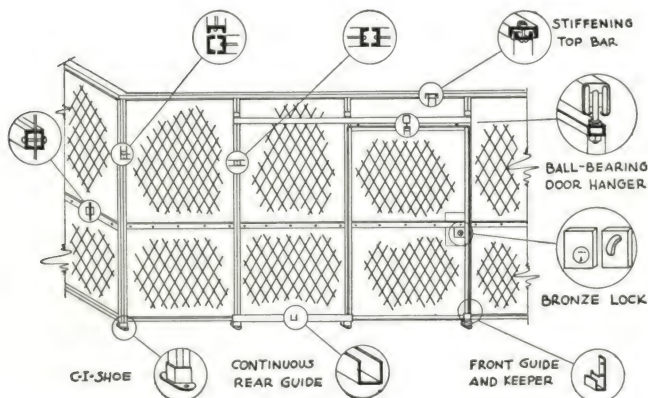
Windows—Sliding or hinged as required.

Hinged Doors—Size as required.

Sliding Doors—Made of 2 ft. 6 in., 3 ft., 3 ft. 6 in., and 4 ft. wide. Ball bearing hangers.

Heights—7, 8, 9 and 10 ft., or as required.

Width—Of standard panels, 5 ft.



Standard Parts Carried in Stock

A large stock of standard parts is carried at all times. This stock enables us to make immediate assembly of any particular requirements and enables us to give quick shipment.

Special Wire Work

The KENTUCKY METAL PRODUCTS COMPANY specializes in the design and construction of all types of wire work to meet unusual conditions or special specifications. We will welcome an opportunity to co-operate with the architect and engineer. Send drawings and description and we will forward our recommendations promptly.



Wire Work for Banks

Kentucky Wire Work for banks includes partitions, enclosures and grilles, in any wire, any mesh and any finish enameled or electro-plated.

Kentucky Wire Guards

Kentucky Wire Guards are constructed for use over any type of windows, glass openings of doors, skylights, etc. Also as safety guards for dangerous machinery.

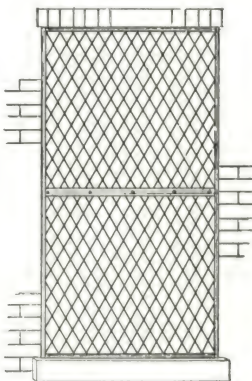
$1\frac{1}{4}$ -in. diamond mesh, No. 12 wire.

$1\frac{1}{2}$ -in. diamond mesh, No. 10 wire.

2-in. diamond mesh, No. 8 wire.

Made with either round or channel frames.

Sizes as specified with or without locks.



Blue Book of Kentucky Wire Work

This book describes and illustrates our complete line with typical layouts and applications. Send for a copy for your files.

WILLIAM R. PITT COMPOSITE IRON WORKS

TELEPHONE
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548 West 27th Street
NEW YORK, N. Y.

Products

Manufacturers of "PITT-BOSTWICK" and "PITT" LAZY TONG FOLDING GATES and GUARDS for every purpose.

Where Used

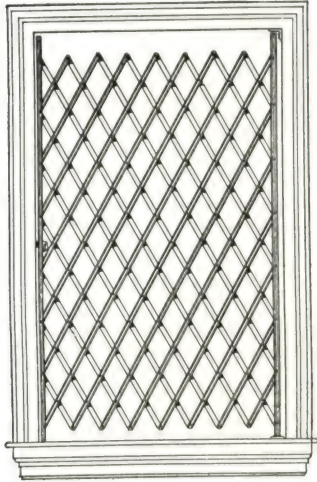
These folding gates are designed for use in banks, churches and theatres; school corridors, entrances and stairs; private residences and apartments; elevator cabs, steamships, trucks and delivery cars.

Quality of Work

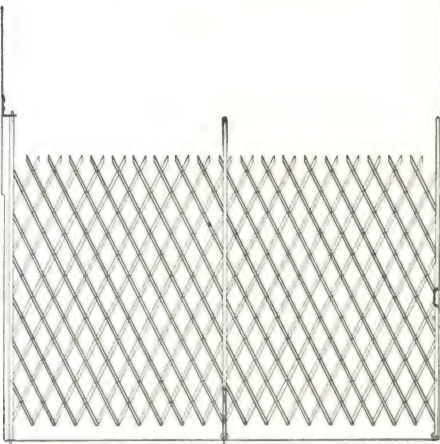
Every Pitt product is of the highest grade workmanship and material. They are strong, durable and operate easily. Folding gates and guards are a specialty. This company is the original manufacturer of the "Bostwick" gate and the originator of most of the standard folding gates. By training, experience and facilities we are prepared to meet the demands of architects, builders and the iron trade.

Folding Gate Estimates

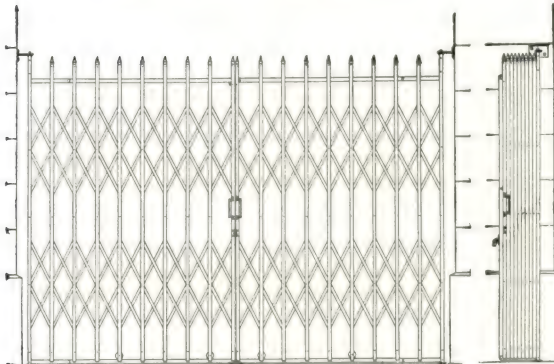
State purpose for which gate is intended. Send plans and specifications, or sketch, showing width and height, and where gate is to set.



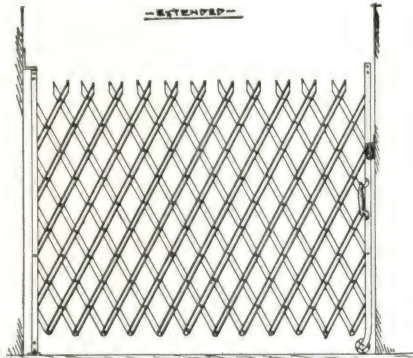
No. 1316. "Pitt" Lazy Tong Guard for Windows
No tracks



No. 1303-D. "Pitt" Lazy Tong Gate with Pointed Tops
Also made with rounded tops



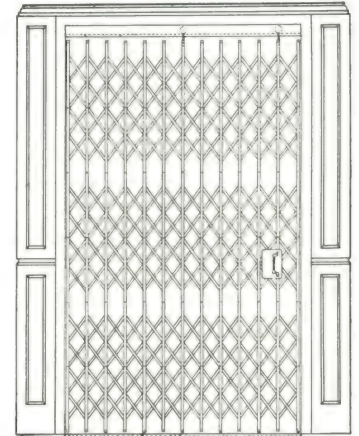
No. 1262. "Pitt-Bostwick" Gate with Cast Pickets, Hinged Stiffening Bars and Hinged Lifting Bottom Tracks



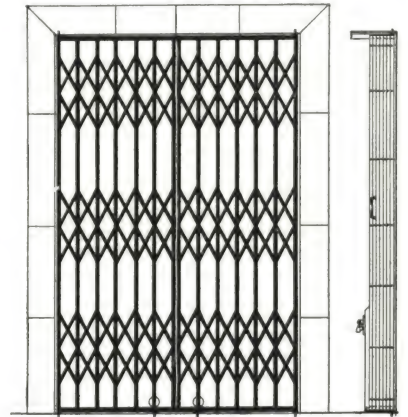
No. 1303-A. "Pitt" Lazy Tong Gate with Pointed Tops
Also made with rounded tops



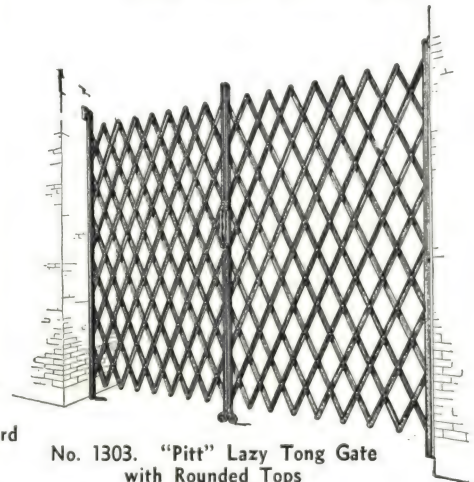
No. 1267. "Pitt-Bostwick" Guard for Window, with Stationary Top and Bottom Tracks
Can be arranged to fold and swing



No. 1282. "Pitt-Bostwick" Elevator Gate with Tubular Top Track



No. 1284. "Pitt-Bostwick" Vestibule or Window Gate with Stationary Top and Hinged Lifting Bottom Tracks



No. 1303. "Pitt" Lazy Tong Gate with Rounded Tops
Also made with pointed tops

MEMORANDA

AMERICAN MAST & SPAR CORPORATION

Manufacturers of Flag Poles, Yacht Masts, Spar Booms and Derrick Masts

TELEPHONE
LUDlow 4-1050, 1051

149th Street and East River
NEW YORK, N. Y.

Cable
"MASTSPAR"

WE MANUFACTURED AND ERECTED ALL THE FLAG POLES ON THE ROCKEFELLER CENTER BUILDINGS, NEW YORK

Metal Flag Poles

Made of copper-bearing steel, aluminum and bronze.

Made one-piece continuous taper; one-piece continuous taper with entasis; swaged jointed in several sections; and tilting flag poles.

Wood Flag Poles

Made of especially selected yacht spar timber, machine turned, sand papered and given three coats of best white lead and oil.



Counterbalanced Flag Pole
Unit "A" (Patented)
For ground setting

Top Mast Flag Poles

Specially designed for yacht clubs, country clubs, golf clubs, homes, amusement parks and schools. Made in all sizes by shipbuilders who are master craftsmen, out of steel or wood.

All iron fittings galvanized. When we build a pole you can depend on a trim, ship-shape appearance.

Counterbalanced Roof Flag Poles

Our counterbalanced roof poles unit "W" are of a different design from our ground poles and they can be installed upon an ordinary concrete or wood roof without any special preparation being made in the building for them. They are much lighter than steel poles cast iron weighted



Topmast Flag Pole with Yardarm
Built like a ship mast

Made of copper-bearing steel or selected Oregon fir spar timbers, machine turned to true entasis. The Topmast is so made that it can be lowered in stormy seasons and for painting. All iron work is galvanized

Dimensions of Top Mast Flag Poles

No.	Net length, ft.	Actual length, ft.	Heel diam., in.	Approx. weight, lb.
99	50	55	8	900
100	60	66	10	1500
102	75	82	12	2500
103	100	110	16	5900
104	125	137	20	8000

Designed and built by spar makers. Prices upon application.



Unit "A," Lowered

Unit "A" in a lowered position with ornamental base removed. If architects prefer, they can design their own bases to fit our units. We will furnish all measurements. Poles are manufactured out of selected yacht spar timber and can be made up to a height of 48 ft. for this unit. Poles are painted with three coats of outside white marine paint. Base and trimmings can be of bronze, aluminum or cast iron. This makes a beautiful setting for schools and parks. Prices gladly furnished



Tapered Steel Pole

Our ground poles are made of both wood and copper-bearing steel.

Wood flag poles are made of selected grade yacht spar timber and machine turned to true entasis.

Metal flag poles are made according to flag pole manufacturers' standard specifications consisting of swaged sectional joints or continuous taper out of all metals.

Prices on application.

BABCOCK-DAVIS CORPORATION

Manufacturers of Steel Flag Poles—Sectional or Continuous Taper

474 Dorchester Avenue

BOSTON, MASS.

For our pages on Mechanical and Electrical Specialties, see File Index

CONSTRUCTION AND ADVANTAGES OF BABCOCK-DAVIS EASY ACCESS POLE

U. S. Patent No. 1665535, April 10, 1928

Principle of the Easy Access Pole Design

It is designed to overcome the expense and difficulty often experienced in replacing fouled and broken halyards as well as making it easy to erect and paint at all times. Every flag pole should be thoroughly inspected at least once a year.

With the Easy Access Pole, no steeple-jack is required to do this, as one man can raise or lower the pole in a few minutes.

A ratchet wrench, supplied by us, is used to operate a worm gear, which turns against the geared edge of a quadrant secured to the bottom of the pole. The pole by this means is raised or lowered or securely held in any position desired, making it possible to incline pole over parapet.

Economy of Erection and Upkeep

The saving in erection together with a yearly inspection and painting will offset the slight additional cost of the Easy Access Pole over that of the plainest type of pole.

It is readily installed on all types of frame or fireproof roof construction and on grade foundations within grounds of schools, public buildings, parks, private estates, etc. For grade installation, a monumental aluminum or bronze base can be supplied to cover the operating mechanism, to which tablets or inscriptions can be attached.

The Patented Easy Access Base Construction

One of the principal features of the base is that the base plate and web plates are integral and installed as one. By this method no special requirements for long braces or extra flashings are required. The comparatively small and inconspicuous base is set on an island raised above the roof as shown in the details on the following pages and is built in with the roof construction.

The base also contains the worm which operates the gears of the quadrant on the bottom of pole.

The heavily galvanized base plate is drilled to receive anchor bolts installed according to shop drawings supplied by us. It is set in plastic cement and bolted to roof construction, then

roofing material is carried over it, thoroughly flashing the base.

The island type of construction which we use with our poles is the most advanced method of setting flag poles and it is readily seen why there has never been a leaky roof where any of our bases have been installed.

Poles Sectional or Continuous Taper

Standard poles are made in sections graduated to give a graceful taper. Continuous taper poles can also be supplied if specified.

Poles are constructed from copper bearing steel tubing or steel pipe. Sections of sectional poles are shrunk and welded together so that all joints are waterproof. Field joints where required are readily made, upper pieces resting on heavy supports and aligned by setscrews, then caulked or welded in the field. Poles are open at the bottom and vented through top. The ventilation prevents condensation and rusting inside of pole. All poles are given one coat of red lead and two coats of aluminum paint before shipment.

The Invisible Halyard Connector

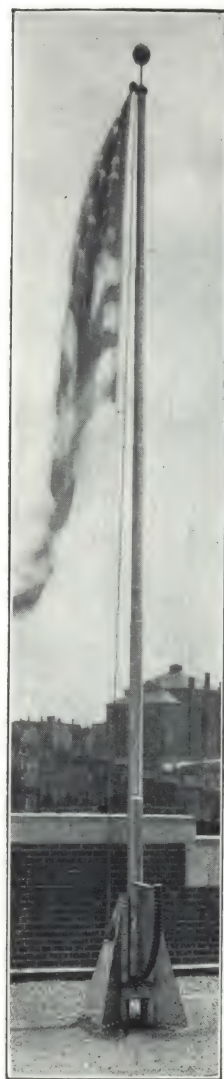
Our invisible connector makes a continuous halyard that can be readily disconnected to renew and will always take the strain of the weight of the halyard off of the flag. This prevents the flag ripping at the grommets. With this connector there is no opportunity to lose the halyard while removing the flag.

Specification

Furnish and erect Babcock-Davis Easy Access Pole . . . ft. high (if canted, specify degree of angle), equipped with (6, 8 or 10-in.) 22-karat gold leafed copper ball, ball bearing swivel top, continuous braided cord halyards, with invisible connector, halyard cleat, and operating ratchet wrench as manufactured by BABCOCK-DAVIS CORPORATION, 474 Dorchester Avenue, Boston, Mass.

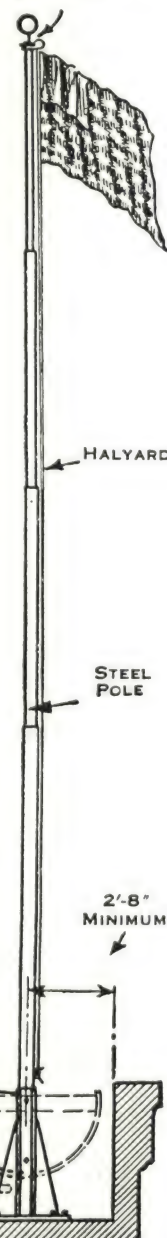
All poles shall be given one coat of red lead and two coats of aluminum paint before shipment.

Note: For roof installation specify forming of island as shown in details to take base and building-in of anchor bolts. If on ground specify foundations and height carried above surface of ground and bolts located according to shop drawings supplied by us.



25-ft. B-D Pole, H. P. Hood Co. Building, Charlestown, Mass.

GOLD LEAF
COPPER BALL
BABCOCK-DAVIS
TYPE
BALL BEARING
SWIVEL TOP



IT IS AS EASILY ACCESSIBLE AS ITS NAME IMPLIES

STANDARD SIZES AND EQUIPMENT OF EASY ACCESS POLES

The standard sizes of the Easy Access Poles are illustrated below. Sizes 20, 25, 30, 35, 40 and 50 ft. are carried in stock, other lengths are made to order and shipped on short notice.

The poles and bases are finished with one coat of red lead and two coats of aluminum paint. The base plate is heavily galvanized. The entire pole can be supplied galvanized. Also made of aluminum or bronze.

Standard Equipment

All Easy Access Poles are equipped with 22-karat gold leafed copper ball, in 6, 8 or 10-in. size, B-D ball bearing swivel top, continuous braided cord halyards with invisible connector (this prevents undue strain on flag), cleat, flag snaps, and ratchet wrench for raising or lowering the pole. Weather vanes can be supplied at an extra charge.

Monumental Bases

Monumental bases of aluminum or bronze, as illustrated, are available for grade installations for schools, public build-

ings, parks and estates when so desired. Pole and base mechanism are enclosed by the ornamental base which is easily removed when necessary to lower pole. Any tablet or inscription can be attached as desired.

At Left:

Monumental Base for 50-ft. Pole

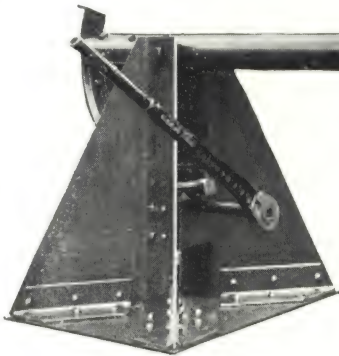
For 60 and 70-ft. poles, base is 4 ft. 3 in. square, and 5 ft. 8 1/2 in. high



Raised Position

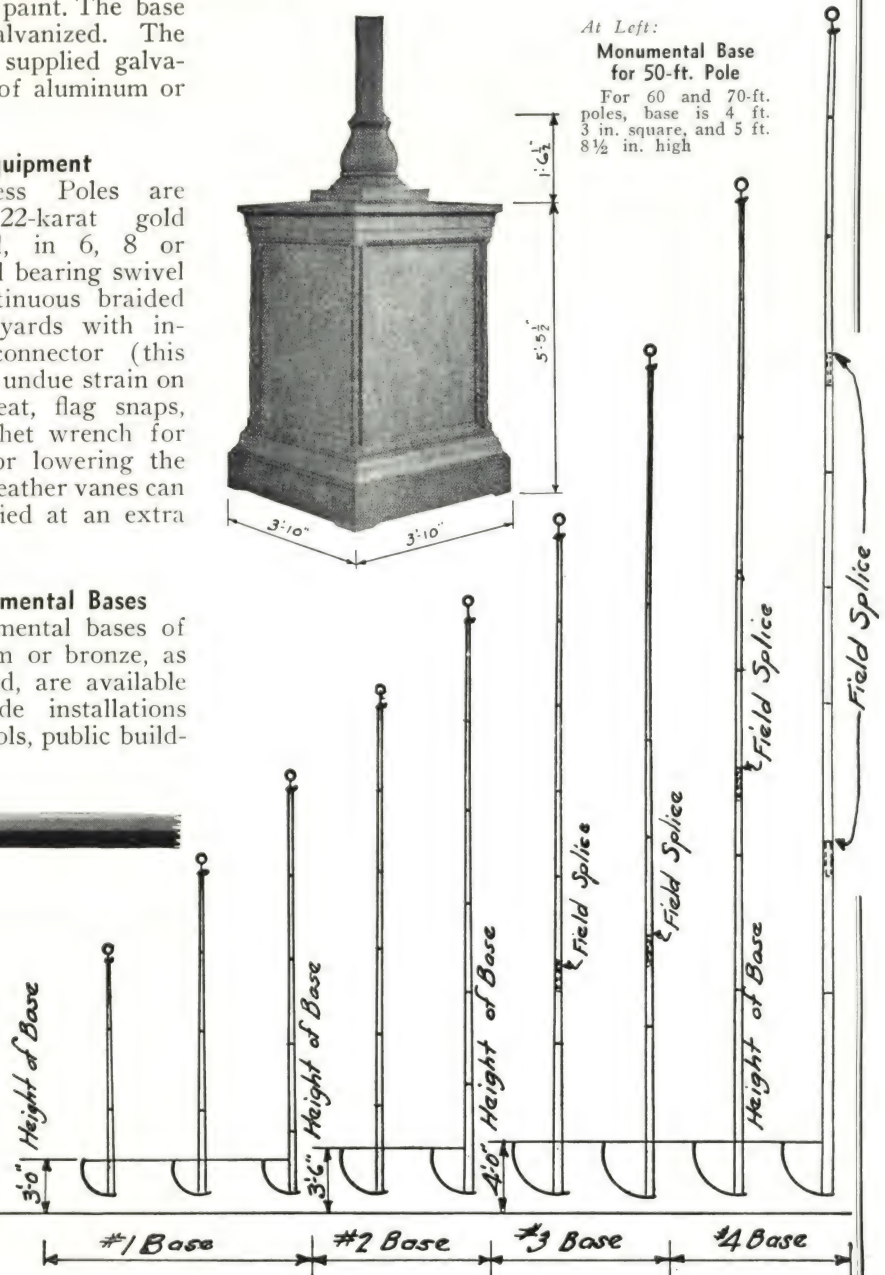
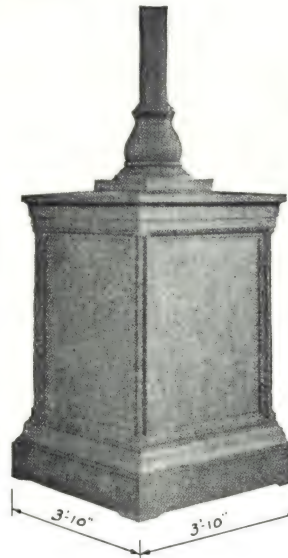
Illustrations show standard base with pole in raised and lowered positions and the removable ratchet wrench.

Patented April 10, 1928. No. 1665535



Lowered Position

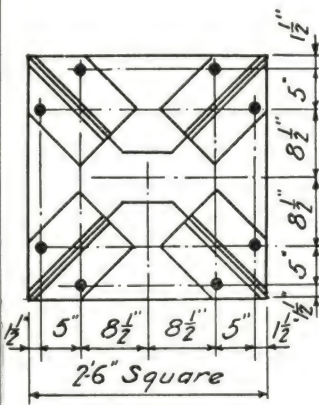
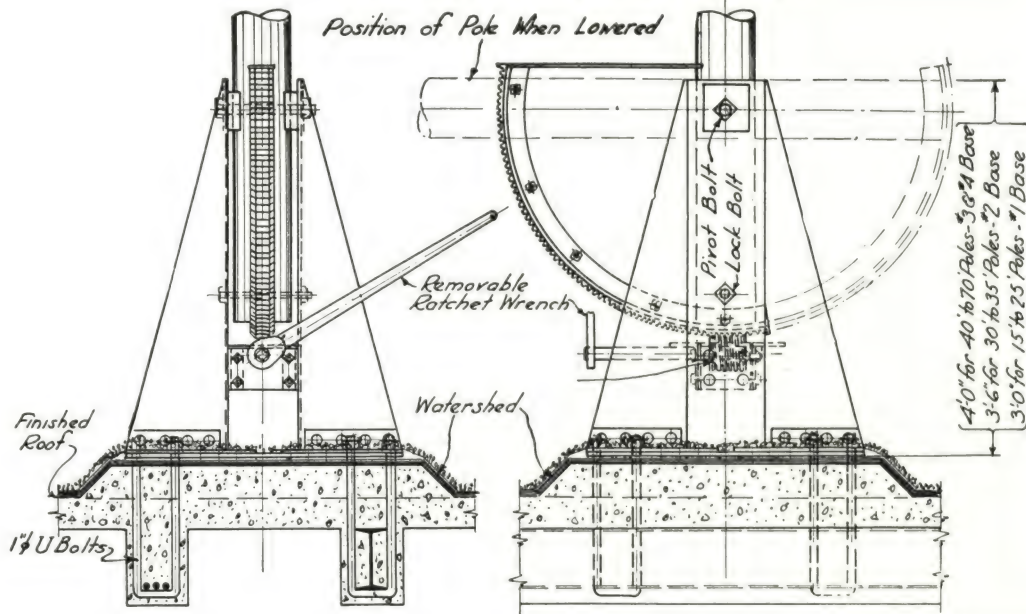
Roof or Grade



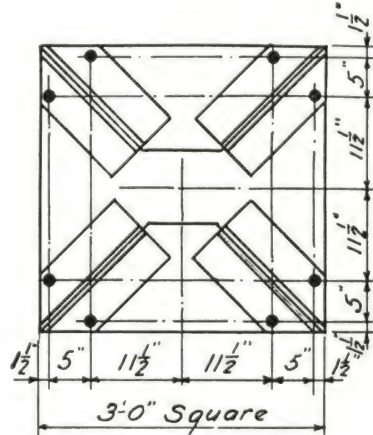
Height Above Roof or Grade	15'	20'	25'	30'	35'	40'	50'	60'	70'
Outside Dia. of Top Section	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"	2 3/8"
Outside Dia. of Bottom Section	3 1/2"	4"	4 1/2"	5"	5"	6 1/2"	6 1/2"	7 1/2"	7 1/2"
Dia. of Gold Leafed Copper Ball	6"	6"	6"	6"	6"	8"	8"	10"	10"
Weight of Pole	100	160	210	305	335	650	775	1225	1425
Weight of Base & Quadrant	350	350	350	475	475	775	775	1250	1250
Total Shipping Weight	450	510	560	780	810	1425	1550	2475	2675
Number of Shipping Sections of Pole	One	One	One	One	One	2	2	2	3

The above table gives dimensions and weights for standard sizes of poles, bases and fittings.

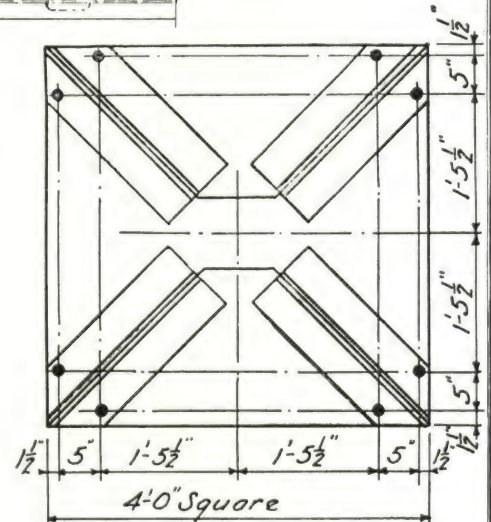
STANDARD ROOF ANCHORAGE



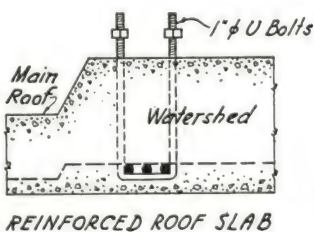
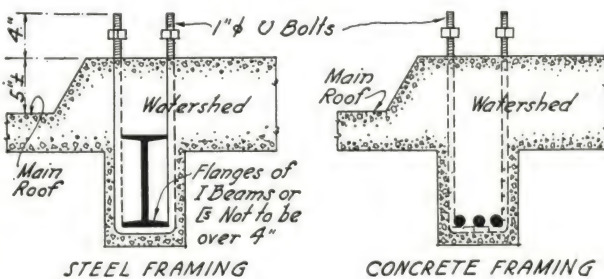
**NOS. 1 AND 2 BASE
FOR 15 TO 35-FT.
POLES**



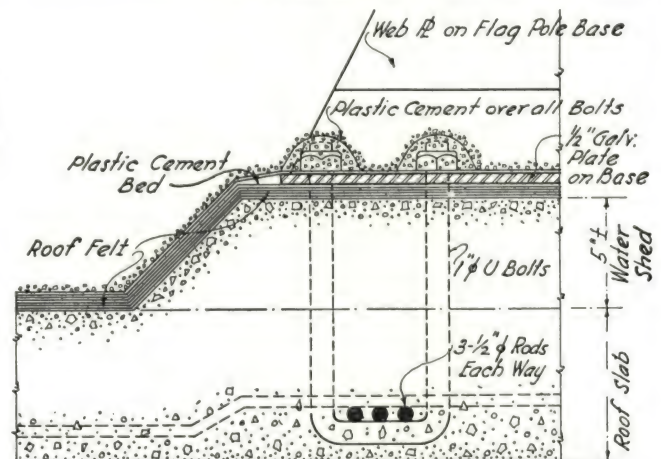
**NO. 3 BASE
FOR 40 TO 50-FT. POLES**



**NO. 4 BASE
FOR 60 TO 70-FT. POLES**



**DETAILS,
SHOWING
SPACING OF
BOLTS FOR
BOLTING TO
ROOF**



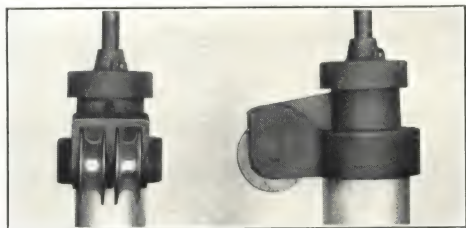
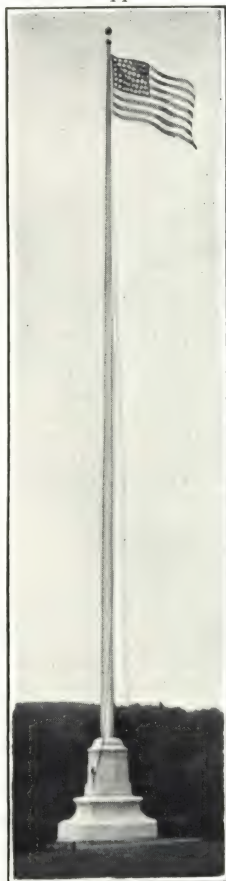
**1/2-IN. SCALE DETAILS SHOWING METHOD
OF SECURING ANCHOR BOLTS TO
CONCRETE ROOF CONSTRUCTION**

B-D BALL BEARING, NON-FOULING REVOLVING HALYARD TOP

Patent Applied For

The new B-D Ball-Bearing Halyard Top does not cut or chafe the halyards and allows the flag or flags to fly without fouling. It differs from the ordinary double halyard top in principle in that the pulleys are on one side only, instead of opposite sides. For this reason the double halyards are always pulling together, straight over the pulleys of the B-D top, instead of across the edge of the pulley and petticoat of the ordinary top thereby preventing chafing the halyard, especially if one flag is larger than the other. This chafing also occurs when only one flag is used on the ordinary type double halyard top.

General Construction—The top either for single or double halyards is of two-bearing, free flying type. The bearings are made to rigid specifications, as compiled by the U. S. Navy Department, governing all the control pulley bearings used for aeronautical purposes. There are 28 balls, $\frac{1}{4}$ in. diameter in each top, encased so that rain or dirt cannot reach them.

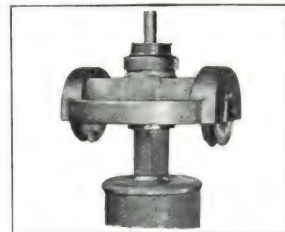
**New B-D Free Flowing Halyard Top****B-D Continuous Tapered Flag Pole at Veterans Hospital, Rutland Heights**

88 ft. 0 in. overall, 15 in. diameter at base and 5 in. diameter at tip, equipped with bonnet type halyard top and 12 in. gold leafed copper ball

Tops are made of aluminum with a stainless steel spire to take finial, which is a 20-oz. spun copper ball covered with 22 karat gold leaf, waterproof sized and soldered to a seamless brass tube. This spire will also accommodate any special design, such as eagles, vanes, etc., instead of the usual ball. The bronze halyard sheaves are roller bearing on stainless steel pins. Top will be made of bronze if so specified.

B-D Bonnet type halyard top is made of either bronze or aluminum. Body is 10 in. in diameter revolving on 32 weather-proofed $\frac{1}{4}$ in. balls entirely enclosed from rain and dirt. Body spindle is $1\frac{1}{2}$ in. bronze. Finial rod is $\frac{5}{8}$ in. diameter stainless steel and body is equipped with two 4 in. diameter roller bearing bronze sheaves mounted on $\frac{1}{2}$ in. stainless steel shaft.

Continuous or Entasis Tapered Poles—have a perfectly smooth exterior surface and are of graceful proportion. By our new method of manufacture we are now able to reduce the price on "Entasis or Continuous Tapered" poles to practically the cost of a heavy weight sectional pole.

**B-D Bonnet Type Halyard Top****A FEW INSTALLATIONS OF BABCOCK-DAVIS EASY ACCESS POLES**

ALABAMA: Toolen High School, Mobile
S. H. Kress Co., Montgomery
ARIZONA: Lowell School, Lowell
ARKANSAS: Park Hotel, Hot Springs
COLORADO: S. H. Kress Co., Colorado Springs
S. H. Kress Co., Pueblo
CONNECTICUT: First National Stores, Hartford
State Trade School, Hartford
State Armory, New Haven
Green Acres Farm, North Madison
The Edgar C. Stiles School, West Haven
DISTRICT OF COLUMBIA: Woodward Lothrop Building, Washington
Cleveland-Emerson Telephone Building
Star Building, Washington
School, St. Augustine's Group, Washington
FLORIDA: S. H. Kress Co., Tampa
ILLINOIS: U. S. Post Office, Chicago
John Deere School, East Moline
KANSAS: Swift & Co., Kansas City
S. H. Kress Co., Wichita
KENTUCKY: Southern Bell Telephone Building, Louisville
Louisville Baseball Grounds, Louisville
LOUISIANA: American Bank Building, New Orleans

MAINE: Hancock County Courthouse, Ellsworth
MASSACHUSETTS: Boston City Hospital, Boston
Public Service Building, Boston
Edison Office Building, Boston
District Court Building, Springfield
St. Patrick's School, Stoneham
MICHIGAN: City National Bank Building, Lansing
Board of Water & Light Building, Lansing
Saranac High School, Saranac
NEBRASKA: Administration Building, Soldiers and Sailors Home, Grand Island
James Webb Store, Grand Island
NEW HAMPSHIRE: Armory, Dover
NEW JERSEY: Asbury Park Theatre, Asbury Park
L. F. Hersh Building, Elizabeth
First National Bank, Plainfield
NEW YORK: West Albany School, Albany
Clizbe Avenue Grade School, Amsterdam
Senior High School, Amsterdam
Auburn Senior High School, Auburn
Buffalo-Ammonia Company, Brooklyn
Abraham & Straus Dept. Store, Brooklyn
First National Bank, Lindenhurst, L. I.
First National Bank, Mamaroneck
Montauk Yacht Club, Montauk

NO. DAKOTA: Leland Parker Hotel, Minot
OHIO: U. S. Post Office, Cleveland
Ohio Bell Telephone Co., Dayton
Norfolk & Western Railway, Portsmouth
First National Bank, Salem
Monroe Township School, Continental
PENNSYLVANIA: Municipal Building, Coraopolis
Forest Oil Building, Bradford
St. Francis Hospital, Pittsburgh
RHODE ISLAND: R. I. Hospital Trust Co., Woonsocket
SO. CAROLINA: S. H. Kress Co., Spartanburg
TENNESSEE: S. H. Kress Co., Elizabethton
TEXAS: High School, Brownsville
Negro Y. M. C. A., Dallas
Dreyfuss & Sons Store, Dallas
Montgomery Ward, Fort Worth
S. H. Kress Co., Laredo
San Angelo Junior College, San Angelo
UTAH: Bingham High School, Copperton
VIRGINIA: Brooks Transfer Co., Richmond
St. Joseph's Orphanage, Richmond
Norfolk & Western Railway, Roanoke
WASHINGTON: Larson Building, Yakima
WEST VIRGINIA: Chesapeake & Potomac Telephone Building, Charleston
Harrison County Courthouse, Clarksburg

JOHN E. LINGO & SON, INC.

Flagpoles in Copper Bearing Steel, Bronze and Aluminum

TELEPHONE
Camden 487

28th Street and Buren Avenue
CAMDEN, N. J.

ESTABLISHED 1897

CONTINUOUS TAPERED FLAGPOLES IN THE PRICE RANGE OF SECTIONAL POLES

Continuous Straight Tapered Flagpoles are produced of high grade open hearth steel with a smooth uninterrupted exterior surface throughout resembling a finished wooden flagpole in contour and appearance. They are tapered conically and are made of steel only. The wall thickness is from $\frac{1}{4}$ to $\frac{3}{8}$ -in. depending upon the top diameter of the flagpoles as shown in the table of dimensions below. These poles, up to 65 ft. in length, are shipped in one piece without field joints, whereas poles exceeding 65 ft. are shipped in two pieces and assembled at the erection site by means of a field joint which

must be welded and ground by the pole erector. Continuous Straight Tapered Flagpoles are standardized in two weights for ground setting and roof setting:

Heavy 20 to 100 ft.

Extra Heavy 35 to 100 ft.

They are carried in stock and prompt shipments are assured.

SPECIFICATION "G"—CONTINUOUS STRAIGHT TAPERED FLAGPOLES FOR GROUND SETTING

Furnish and erect a Continuous Straight Tapered Steel Flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J., and build concrete foundation in accordance with their standard details. Flagpole to be ground set [Heavy] [Extra Heavy] type with feet exposed height above ground by feet total length with a butt diameter of inches tapering conically to a top diameter of inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—The flagpole shall be constructed of open hearth steel of diameters, wall thickness, etc., as standardized by JOHN E. LINGO & SON, INC., for this type flagpole. The flagpole shall have a smooth uninterrupted exterior surface throughout, without visible joints or offsets.

(Note: If over-all length of pole is 65 ft. or under include the following: Flagpole to be shipped from factory in one piece without field joints.)

(Note: If over-all length of pole exceeds 65 ft. include the following: Flagpole to be shipped from factory in two pieces with one field joint as designed by pole manufacturer. The two pole sections are to be assembled and welded at the erection site by the pole erector.)

Ball—The ball shall be of size recommended by JOHN E. LINGO & SON, INC., for this type flagpole and shall be constructed of 20-oz. copper, covered with Hastings XX gold leaf over three coats of galvanum and one coat of waterproof size. Ball to be mounted on a $\frac{3}{4}$ -in. seamless brass tube and slipped over a $\frac{5}{8}$ -in. diameter galvanized rod attached to truck.

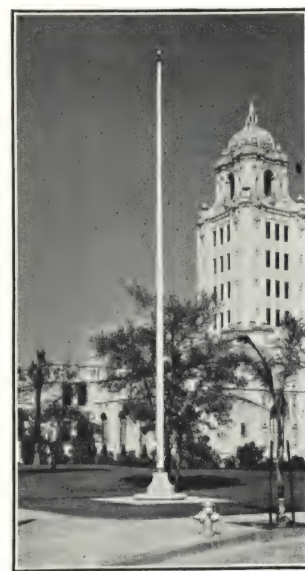
Truck—(To be used on flagpoles with top diameter up to $3\frac{1}{2}$ in. only.) The truck is to be a "Lingo" standard ball bearing revolving truck, with cast iron body galvanized, revolving on manganese bronze spindle, with top and bottom ball races with twenty-six $\frac{1}{4}$ -in. diameter bronze balls each. Truck to be fitted with two $2\frac{3}{8}$ -in. diameter bronze roller bushed sheaves for $\frac{3}{8}$ -in. diameter bronze pins.

Alternate for Truck—(To be used on flagpoles with top diameters of 4 in. or over.) The truck is to be a "Lingo" extra heavy ball bearing revolving truck, with bronze body, revolving on manganese bronze spindle, with bottom ball race with thirty $\frac{1}{4}$ -in. manganese bronze balls. Truck to be fitted with two 4-in. diameter bronze sheaves with bronze roller bushings and $\frac{1}{2}$ -in. monel metal pins.

Halyards—Provide two sets of $\frac{3}{8}$ -in. U. S. standard manila bolt rope halyards with bronze swivel snaps for securing to flag.

Cleats—Provide two 9-in. cast iron galvanized cleats tapped to flagpole with two $\frac{1}{8}$ -in. galvanized flat head stove bolts.

Ground Protector—Provide a copper bearing steel ground protector, 18 in. long, extending 12 in. above and 6 in. below the grade and to be shrunk to the pole, calked on the upper edge and electric-welded on the lower edge to the flagpole.



50 Ft. Above Grade, Continuous Straight Tapered Heavy Type Steel Flagpole
City Hall, Beverly Hills, Calif.

DIMENSIONS, CONTINUOUS STRAIGHT TAPERED FLAGPOLES FOR GROUND SETTING

Exposed height, ft.	Foundation depth, ft.	Total length, ft.	Diameter, in.			Shipping weight, lb.	Wall thickness, in.
			Butt	Top	Ball		
Heavy							
20	3	23	5	3 1/2	5	285	1/4
25	3 1/2	28 1/2	6	3 1/2	6	400	1/4
30	3 1/2	33 1/2	6 5/8	3 1/2	6	605	5/16 x 1/4
40	4	44	7 5/8	3 1/2	8	925	5/16 x 1/4
50	5	55	8 5/8	3 1/2	8	1275	5/16 x 1/4
60	6	66	10 3/4	3 1/2	10	1750	3/8 x 1/4
70	7	77	11 3/4	3 1/2	10	2200	3/8 x 1/4
75	7 1/2	82 1/2	12 3/4	4	12	2575	3/8 x 1/4
80	8	88	14	4	12	2950	3/8 x 1/4
90	9	99	15	4	14	3550	3/8 x 1/4
100	10	110	16	4	14	4475	3/8 x 1/4
Extra Heavy							
35	4	39	7 5/8	3 1/2	8	810	5/16 x 1/4
40	4	44	8 5/8	4	8	980	5/16 x 1/4
45	4 1/2	49 1/2	9 5/8	4 1/2	8	1250	5/16 x 1/4
50	5	55	10 3/4	5	10	1600	5/16 x 1/4
60	6	66	11 3/4	5 1/2	10	2150	5/16 x 1/4
65	6 1/2	71 1/2	12 3/4	5 1/2	12	2560	5/16 x 1/4
70	7	77	14	5 1/2	12	2900	5/16 x 1/4
75	7 1/2	82 1/2	15	5 1/2	14	3450	5/16 x 1/4
80	8	88	16	5 1/2	14	3875	5/16 x 1/4
90	9	99	18	6 1/2	14	5585	5/16 x 1/4
100	10	110	20	6 1/2	14	6285	5/16 x 1/4

OTHER PRODUCTS AND SERVICE

We also manufacture Continuous Entasis Tapered Copper Bearing Steel, Bronze and Aluminum Flagpoles, standardized in various heights and diameters especially suitable for monuments, memorials and buildings of exceptional architectural value; and also standardized for

window or outrigger settings. Equipoise Counterbalanced Tilting Flagpoles are also available. Catalogue with full information gladly furnished on application. We are always glad to co-operate with architects in the solution of problems pertaining to flagpoles.

Specification "H"—Continuous Straight Tapered Flagpoles for Roof Setting, Anchored to Roof with Braces

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet exposed height above roof level with inches butt diameter tapering conically to a top diameter of inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "G.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Flash Collar—Provide bronze flash collar, place on the flagpole at the height indicated and calk metal to metal after roof flashing has been installed by the roofing contractor.

Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to [concrete] [steel] [wood] construction as indicated on drawing No. B-5-A of JOHN E. LINGO & SON, INC.

Braces—Provide [tubular turnbuckle] [adjustable telescope] braces of proper number, length and sizes as detailed on drawing No. B-5-A of JOHN E. LINGO & SON, INC., and complete with brace collar and brace anchors. Braces to be made of copper bearing tubular steel. Brace collar to be calked to flagpole after erection at the proper height to rigidly support the flagpole. All the necessary drilling of [steel] [wood] beams (or placing of anchors in concrete) to be located in accordance with detail drawings to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

Specification "J"—Continuous Straight Tapered Flagpoles for Roof Setting, without Braces and Penetrating Roof to Loft Floor

Furnish and erect a continuous straight tapered steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet exposed height above roof plus a distance of feet to loft floor; flagpole butt diameter inches tapering conically to a top diameter of inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "G.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

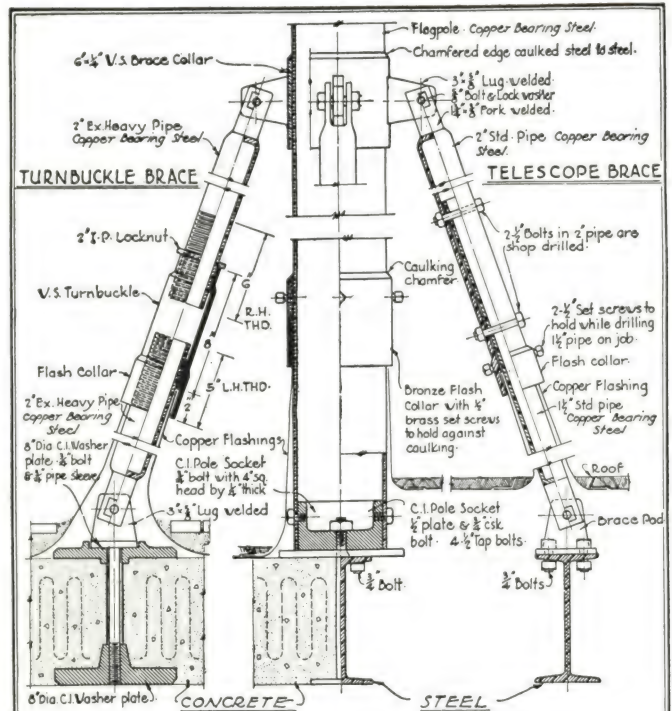
Flash Collar—(See paragraph under Specification "H.")

Roof Tube (if concrete slab) or Guide Flange (if steel or wood roof)—Provide [roof tube] [guide flange] of proper size to suit flagpole butt diameter; to be fastened to roof construction and calked metal to metal before roof flashing has been installed by the roofing contractor.

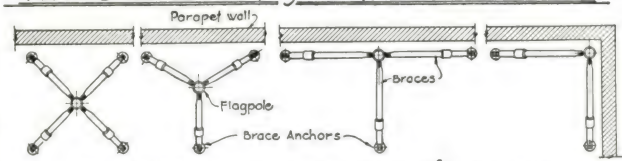
Pole Socket and Plate—(See paragraph under Specification "H.")

DIMENSIONS, CONTINUOUS STRAIGHT TAPERED FLAGPOLES FOR ROOF SETTING

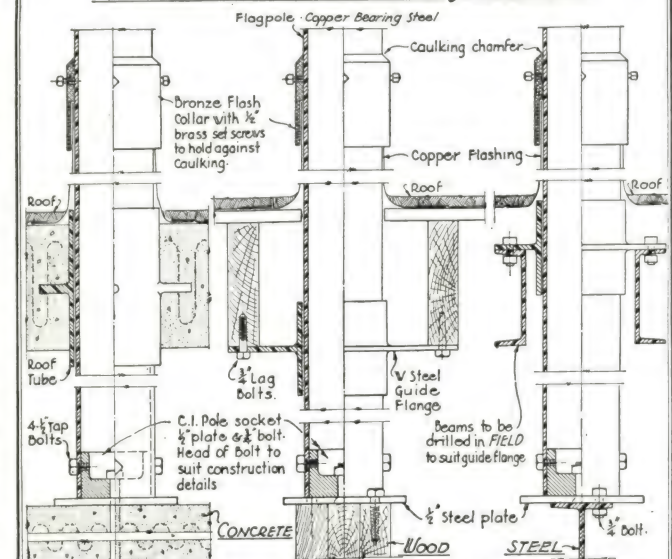
Exposed height, ft.	Diameter, in.		Shipping weight, lb.	Wall thickness, in.
	Butt	Top		
Heavy				
20	5	3 1/2	240	1/4
25	6	3 1/2	350	1/4
30	6 5/8	3 1/2	540	5/16 x 1/4
40	7 5/8	3 1/2	825	5/16 x 1/4
50	8 5/8	3 1/2	1130	5/16 x 1/4
60	10 3/4	3 1/2	1500	5/16 x 1/4
70	11 3/4	3 1/2	1880	5/16 x 1/4
75	12 3/4	4	2200	5/16 x 1/4
80	14	4	2510	5/16 x 1/4
90	15	4	3025	5/16 x 1/4
100	16	4	3850	5/16 x 1/4
Extra Heavy				
35	7 5/8	3 1/2	705	5/16 x 1/4
40	8 5/8	4	865	5/16 x 1/4
45	9 5/8	4 1/2	1090	5/16 x 1/4
50	10 3/4	5	1390	5/16 x 1/4
60	11 3/4	5 1/2	1865	5/16 x 1/4
65	12 3/4	5 1/2	2235	5/16 x 1/4
70	14	5 1/2	2515	5/16 x 1/4
75	15	5 1/2	3000	5/16 x 1/4
80	16	5 1/2	3370	5/16 x 1/4
90	18	6 1/2	4950	5/16 x 1/4
100	20	6 1/2	5500	5/16 x 1/4



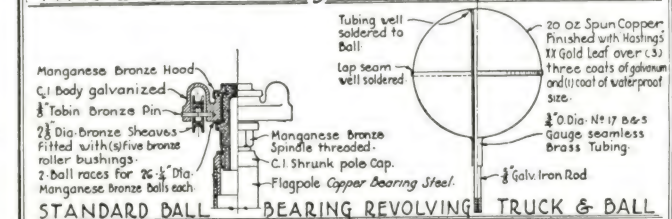
TYPICAL DETAIL ARR'GT OF FLAGPOLES ABOVE ROOFS



PLAN VIEWS SHOWING TYPES OF BRACING



TYPICAL DETAIL ARR'GT OF FLAGPOLES PASSING THRU ROOFS



STANDARD BALL BEARING REVOLVING TRUCK & BALL

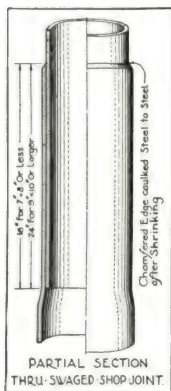
DRAWING
No B-5-A

JOHN E. LINGO & SON, INC.
CAMDEN, NEW JERSEY.

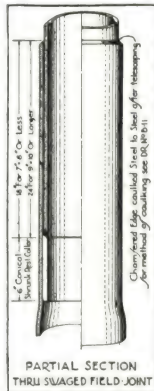
SCALE
1"=1'00"

SWAGED SECTIONAL FLAGPOLES

These poles are fabricated by joining consecutive diminishing diameters of new mill run of full weight standard, open hearth (lap-welded), copper bearing steel tested pipe with joints



either of the *shop* type (hydraulic bell die-swaged, telescoped and shrunk) or of the *field* type (hydraulic bell die-swaged and self-aligning), constructed without bolts, pins, rivets, screw couplings or lead calking and designed to withstand wind stresses up to 90 miles per hour with a conservative bending resistance. They are shipped in one or more knocked down sections and assembled on the ground by means of the field joints. Each section is made to suit car lengths which allows transportation at a



minimum rate (for less than carload lots) and each section may contain two or more pieces to produce the proper reduction. At the erection site the flagpole erector merely pushes or telescopes the sections together and after erection makes the field joints airtight and watertight by calking metal to metal with only an ordinary hammer and calking chisel. Inexperienced men may, in a minimum length of time, accomplish the erection of these flagpoles.

SWAGED SECTIONAL FLAGPOLES FOR GROUND SETTING

Exposed height, ft.	Founda- tion, depth, ft.	Total length, ft.	Diameter, in.			Ship. wgt., lb.	Sections	
			Butt	Top	Ball		Num- ber	Num- ber k. d.
Light Pattern								
17	3	20	3 1/2	2 7/8	5	145	3	1
25	3 1/2	28 1/2	4	2 7/8	5	242	4	2
33	4	37	4 1/2	2 7/8	6	360	5	2
41	4 1/2	45 1/2	5	2 7/8	6	502	6	3
49 1/2	4 1/2	54	5 1/2	2 7/8	6	653	7	3
57 1/2	5	62 1/2	6 1/2	2 7/8	8	850	8	4
65 1/2	6	71 1/2	7 1/2	2 7/8	8	1100	9	4
73	6	79	7 7/8	2 7/8	8	1310	9	5
80	7	87	8 1/2	2 7/8	8	1625	10	5
90	8	98	9 1/2	2 7/8	10	2100	11	6
100	8	108	10 3/4	2 7/8	10	2600	12	6
Heavy Pattern								
20	3	23	4	2 7/8	5	218	3	1
25	3 1/2	28 1/2	4 1/2	2 7/8	5	314	4	2
30	3 1/2	33 1/2	5	2 7/8	6	405	5	2
40	4	44	5 1/2	2 7/8	6	593	6	3
50	5	55	6 1/2	2 7/8	8	800	7	3
60	6	66	7 1/2	2 7/8	8	1200	8	4
70	7	77	8 1/2	2 7/8	8	1600	9	4
75	7 1/2	82 1/2	9 1/2	2 7/8	10	1960	10	5
80	8	88	10 1/2	2 7/8	10	2410	11	5
90	9	99	11 3/4	2 7/8	10	2840	12	6
100	10	110	12 3/4	2 7/8	12	3600	13	6
125	12	137	14	2 7/8	14	5414	14	7
Extra Heavy Pattern								
25	3 1/2	28 1/2	5	2 7/8	6	380	5	2
30	3 1/2	33 1/2	5 1/2	2 7/8	6	498	6	2
35	4	39	6 1/2	3 1/2	8	716	6	2
40	5	45	7 1/2	3 1/2	8	960	7	3
47	6	53	8 1/2	3 1/2	8	1212	8	3
55	6	61	9 1/2	3 1/2	8	1661	9	4
62	7	69	10 3/4	3 1/2	10	1950	10	4
70	7	77	11 3/4	4	10	2612	10	5
77	8	85	12 3/4	4	12	3183	11	5
85	8	93	14	4	12	4260	12	6
90	10	100	15	4	14	4932	13	6
100	10	110	16	4	14	5870	14	7

Specification "A"—Swaged Sectional Flagpoles for Ground Setting

Furnish and erect a hydraulic bell die-swaged sectional copper bearing tubular steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J., and build concrete foundation in accordance with their standard details. Flagpole to be ground set [Light] [Heavy] [Extra Heavy] pattern with feet exposed height above ground by feet total length with inches butt diameter. After erection, apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—Flagpole to be fabricated in sections of standard full weight copper bearing tubular steel pipe of diameters, thicknesses, lengths and joints as detailed by JOHN E. LINGO & SON, INC., for this type pole. Shop joints to be hydraulic bell die-swaged, shrunk and calked steel to steel. Field joints to be calked steel to steel, airtight and watertight to prevent interior corrosion and deterioration. All joints to be constructed without the use of bolts, pins, rivets, screw couplings or lead calking.

Ball—(See paragraph under Specification "G.")
Truck—(See paragraph under Specification "G.")
Alternate for Truck—(For extra heavy pattern poles with 4-in. top diameter.) (See paragraph under Specification "G.")
Cleats—(See paragraph under Specification "G.")
Ground Protector—(See paragraph under Specification "G").

SWAGED SECTIONAL FLAGPOLES FOR ROOF SETTING

Exposed height, ft.	Diameter, in.			Shipping weight, lb.	Sections	
	Butt	Top	Ball*		Number	Number k. d.
Heavy Type						
20	4	2 ⁷ / ₈		159	3	1
25	4 ¹ / ₂	2 ⁷ / ₈		245	4	2
30	5	2 ⁷ / ₈		325	5	2
40	5 ⁹ / ₁₆	2 ⁷ / ₈		500	6	3
50	6 ⁵ / ₈	2 ⁷ / ₈		680	7	3
60	7 ⁵ / ₈	2 ⁷ / ₈		990	8	4
70	8 ⁵ / ₈	2 ⁷ / ₈		1375	9	4
75	9 ⁵ / ₈	2 ⁷ / ₈		1620	9	5
80	10 ³ / ₄	2 ⁷ / ₈		1750	10	5
90	11 ³ / ₄	2 ⁷ / ₈		2500	11	6
100	12 ³ / ₄	2 ⁷ / ₈		3000	12	6
Extra Heavy Type						
20	5	2 ⁷ / ₈		244	5	1
25	5 ⁹ / ₁₆	2 ⁷ / ₈		341	6	2
30	6 ⁵ / ₈	3 ¹ / ₂		500	6	2
35	7 ⁵ / ₈	3 ¹ / ₂		668	7	2
43	8 ⁵ / ₈	3 ¹ / ₂		953	8	3
51	9 ⁵ / ₈	3 ¹ / ₂		1392	9	4
59	10 ³ / ₄	3 ¹ / ₂		1796	10	4
67	11 ³ / ₄	4		2465	10	5
75	12 ³ / ₄	4		2970	11	5

*To suit height of building.

Specification "B"—Swaged Sectional Flagpoles for Roof Setting, Anchored to Roof with Braces

Furnish and erect a hydraulic bell die-swaged sectional copper bearing tubular steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet exposed height above roof level with inches butt diameter. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "A")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(For extra heavy type poles with 4-in. top diameter.) (See paragraph under Specification "G.")

Halyards—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

Flash Collar—Provide bronze flash collar, place on the flagpole at the height indicated and calk metal to metal after roof flashing has been installed by the Roofing Contractor.

Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to concrete [wood] [steel] construction as indicated on drawing No. B5A of JOHN E. LINGO & SON, INC.

Braces—Provide suitable number of [turnbuckle] [telescope] braces to be of sufficient length and of sizes as detailed on drawing No. B5A of JOHN E. LINGO & SON, INC., and complete with brace collar and suitable brace anchors. Braces to be made of copper bearing tubular steel. Brace collar to be calked to flagpole after erection at the proper height to rigidly support the pole. All the necessary drilling of [steel] [wood] beams (or placing of anchors in concrete) to be located in accordance with detail drawings to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.

Specification "C"—Swaged Sectional Flagpoles for Roof Setting, without Braces and Penetrating Roof to Loft Floor

Furnish and erect a hydraulic bell die-swaged sectional copper bearing tubular steel flagpole complete with all standard fittings as listed below, made by JOHN E. LINGO & SON, INC., Camden, N. J. Flagpole to be roof set [Heavy] [Extra Heavy] type with feet above roof plus a distance of feet to loft floor; flagpole butt diameter to be inches. After erection apply over the shop coat of red metal primer two finishing coats of white lead and oil.

Flagpole Construction—(See paragraph under Specification "A.")

Ball—(See paragraph under Specification "G.")

Truck—(See paragraph under Specification "G.")

Alternate for Truck—(For extra heavy type poles with 4-in. top diameter.) (See paragraph under Specification "G.")

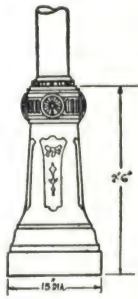
Halyards—(See paragraph under Specification "G.")

Cleats—(See paragraph under Specification "G.")

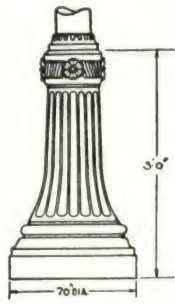
Roof Tube (if concrete slab) or Guide Flange (if steel or wood roof)—To be provided of proper size to suit flagpole butt diameter; to be fastened to roof construction and calked steel to steel before roof flashing has been installed by the roofing contractor.

Flash Collar—(See paragraph under Specification "B.")

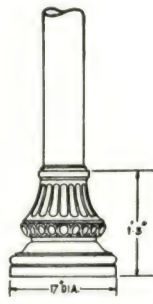
Pole Socket and Plate—Provide cast iron pole socket and steel plate of proper size to suit flagpole and secure with a bolt and bearing plate, fastened to [concrete] [steel] [wood] construction as indicated on drawing No. B5A of JOHN E. LINGO & SON, INC. Detail drawings are to be submitted to the architect for approval by JOHN E. LINGO & SON, INC.



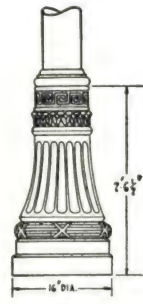
Design No. 2106
4 to 5 in.



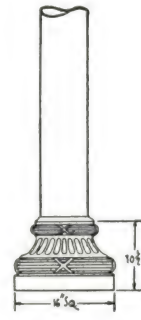
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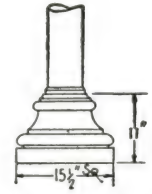
Design No. 2107
5 to 6 1/8 in.



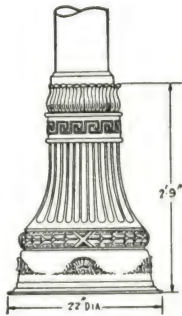
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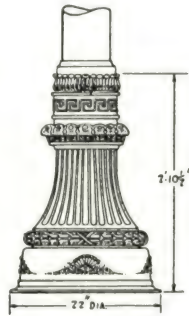
Design No. 2108
5 7/8 to 7 1/2 in.



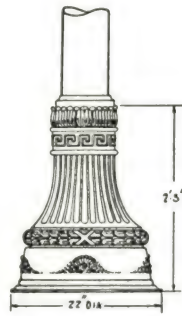
Design No. 1970
5 to 5 1/8 in.



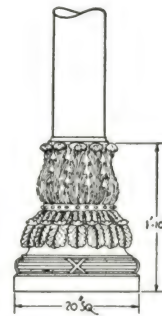
Design No. 2101
6 1/8 to 8 1/8 in.



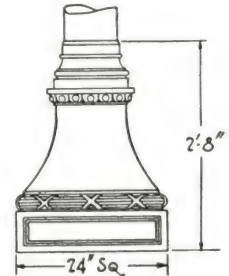
Design No. 2103
5 1/8 to 7 1/2 in.



Design No. 2102
5 1/8 to 7 1/2 in.



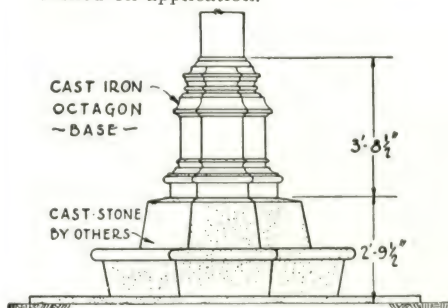
Design No. 2109
6 1/8 to 8 1/8 in.



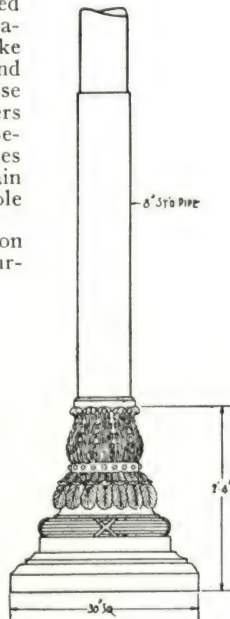
Design No. 1902
7 1/8 to 9 1/8 in.

We carry in stock this complete line of ornamental cast iron flagpole bases, painted or galvanized. A ring collar is cast separate and furnished with the base to make a proper "joint" between the flagpole and the collar for hot lead calking. Each base fits certain flagpoles only the butt diameters of which are shown under each base. Before finally specifying one of these bases for a certain flagpole be sure to ascertain whether the butt diameter of the flagpole will fit the base selected.

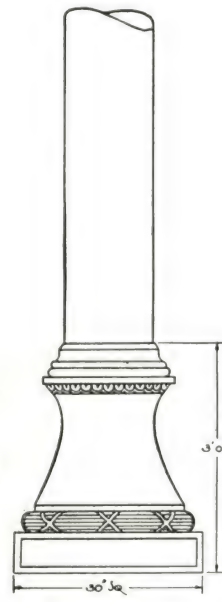
Additional designs of stock cast iron bases are also available. Details gladly furnished on application.



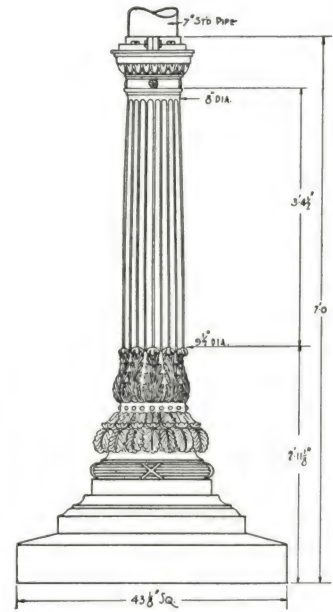
Design No. 1990
12 1/4 to 18 in.



Design No. 2110
7 1/8 to 8 1/8 in.



Design No. 1999
10 1/4 to 16 in.



Design No. 2121
7 1/8 in.

NO SCALE

JOHN E. LINGO & SON, INC.
FLAGPOLES IN COPPER BEARING STEEL, BRONZE AND ALUMINUM
CAMDEN, N. J.

DRAWING
NO. B-6

THE POLE AND TUBE WORKS, INC.

(Incorporated 1918 to Succeed Pole Department of John Simmons Co., Originators of Tubular Flag Poles)

TELEPHONE
Blgelow 3-8154

230 Pacific Street
NEWARK, N. J.

Products

METALLIC FLAG POLES in Steel, Bronze and Aluminum; ORNAMENTAL PEDESTALS; COMPLETE POLE TRIMMINGS; COMPLETE SETTING APPURTENANCES.

Types

"T"—"Telescope Joint" Pipe Poles (Swaged and Shrunk without Pins or Welds)—

"Standard," complying with Building Laws. "Light Pattern," lightest advisable for perfect safety but for ground setting only.

"C"—"Conetaper"—

No visible joints, perfectly smooth outside. About $\frac{1}{3}$ cylindrical, thence conically tapered to top. Open hearth Standard U. S. Pipe Steel, less costly than—

"E"—"Entasis Tapered" Poles—

Taper is individually specific and must therefore be made singly by expensive hand work. The butt diameter should always correspond to that of steel pipe from which the butt is invariably made, viz.:— $2\frac{7}{8}$, $3\frac{1}{2}$, 4, $4\frac{1}{2}$, 5, $5\frac{3}{8}$, $6\frac{3}{8}$, $7\frac{3}{8}$, $8\frac{5}{8}$, $9\frac{5}{8}$, $10\frac{3}{4}$, $11\frac{3}{4}$, $12\frac{3}{4}$, 14, 15, 16, 18, 20 in.

Applicability

Telescope Joint Pipe Poles are suitable for all installations of limited cost without sacrificing the safety and durability demonstrated by over 30,000 poles of our make. The visibility of the joints is undesirable but secondary to the structural merits. At an elevation of about 50 ft. the joints became almost imperceptible.

"Conetaper Poles," with their uniform, conical taper, are the mass product of special machinery. They are suitable for all but the most fastidious, artistic projects, such as ground set Monumental effects for which the "Entasis Tapered" Pole presents the utmost possible perfection in appearance.

Service

Typical installation plates and erection details for any flag pole project; monumental effects, roof poles, outrigger and ground set type. Catalogue on request.

Choice of Metals

All of our "Telescope Joint" and "Entasis Tapered" Poles are of "Copper-alloy" Steel. (Copper content $\frac{1}{3}$ of 1%.) All of our "Conetaper" Poles are of U. S. Standard Pipe Steel; if specified of other steel alloys or wrought iron, they can be made only by hand at much greater cost although neither afford advantages; neither are rustless nor offer a superior base for the obviously indispensable paint protection of every ferrous flag pole.

"Non-corrodible" poles are available in solid and in "Jacketed" type. Preferred metals are copper, manganese bronze, Muntz metal and aluminum. Poles of about 3-in. diameter up to 25 ft. long are economical in solid metal construction while larger poles are cheaper and safer when steel pole is "Jacketed," viz.:—

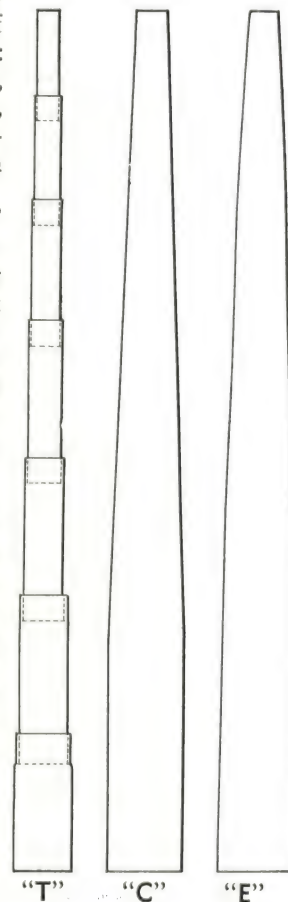
Encased in a homogeneously welded shell of above alloys, from $\frac{1}{8}$ in. to $\frac{1}{4}$ in. thick, properly insulated from core and the differential of expansion compensated.

Appurtenances

We manufacture every imaginable component of every type of flag pole setting: Braces, Sockets, Hangers, Finials, Trucks, Cleats, etc., all designed to meet requirements of modern construction and handling methods.

Our record of 30 years' specialization includes the tallest free standing metal flag pole in the world, the first taper pole, the first non-corrodible metal pole, the first hinged "Outrigger" pole and the first of every improvement in metal flag pole construction.

In the interest of economy, practical design and fair competition we invite Architects and builders to submit to us, before specifying, any pole project in its rough outlines and permit us to submit detail sketches, preliminary costs and tentative impartial specifications without obligation inferred or incurred. Catalogue, typical installation plates (for blue prints) and other descriptive matter for your individual requirements on application.



Two 60-ft. "Aluminum Jacketed Steel" Tapered Poles, U. S. Post Office, Newark, N. J.

W. E. LEHMAN & G. O. TOTTEN, JR., Architects
GENERAL BRONZE CORP., Long Island City,
N. Y., Contractors

TRAFFIC & STREET SIGN COMPANY

Flagpoles Made of Steel, Copper Bearing Steel, Stainless Steel,
Bronze and Aluminum

88 Foundry Street
NEWARK, N. J.

Continuous Tapered Flagpoles

Continuous tapered flagpoles are made by a new process, giving pole an increased strength. Material used in construction of these poles is steel, copper bearing steel, stainless steel, bronze or aluminum. Continuous tapered flagpoles are used where the poles have to be of exceptional architectural value. These flagpoles are made to order and conically tapered or with entasis as specified by the architect. The poles are furnished in lengths from 20 to 125 feet and equipped with truck and finial as described under telescoped poles.

Telescoped Sectional Flagpoles

These poles are produced with shrunk, welded watertight joints, neatly graduated. Stock length from 15 to 130 feet. All joints are constructed without the use of lead calking, bolts or rivets. Poles furnished with bronze ball bearing revolving trucks, galvanized cast iron or bronze body, bronze spindle, bronze sheaves, with bronze roller bearings and finished with 23K gold leaf ball made of 20-ounce copper.

Telescoped poles are shipped in one piece or in sections 22 to 36 feet for erection at the site.

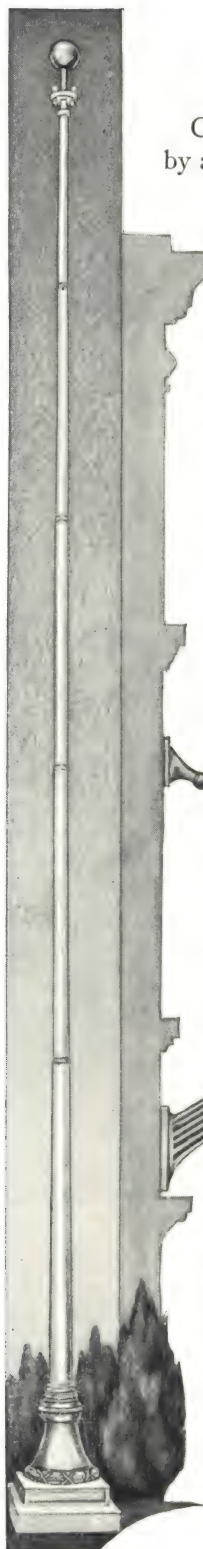
Window or Outrigger Flagpoles

Made in telescoped or continuous tapered construction, extending from face of building at a fixed angle or any angle desired by use of a hinged ornamental escutcheon. Poles are manufactured in length from 15 to 35 feet. Continuous tapered outrigger poles are made of steel, copper bearing steel, stainless steel, galvanized steel, bronze or aluminum. These poles are furnished complete with bronze pulley, block, cleat, halyard, spear head, ball or any other ornamental finial.

Tilting Flagpoles

Manufactured in four sizes:

- No. 0—20 feet high.
- No. 1—25 feet high.
- No. 2—32½ feet high.
- No. 3—40 feet high.



MEMORANDA

**METALS AND
METALWORK** **7**
- SECTION -

CATALOGS 1 to 27

ALLEGHENY STEEL COMPANY

GENERAL OFFICES AND WORKS

BRACKENRIDGE, PA.

BRANCH OFFICES

BUFFALO, N. Y., Iroquois Gas Building
CHICAGO, ILL., Willoughby Tower
DETROIT, MICH., General Motors Building

MILWAUKEE, WIS., Bankers Building
NEW YORK, N. Y., Lincoln Building
WASHINGTON, D. C., 1113 17th Street, N. W.

PHILADELPHIA, PA.

CLEVELAND, OHIO

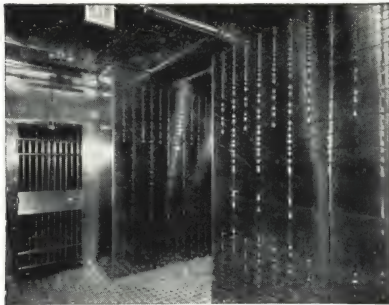
DISTRICT REPRESENTATIVES

ST. LOUIS, MO.

LOUISVILLE, KY.

HOUSTON, TEX.

LOS ANGELES, CAL.

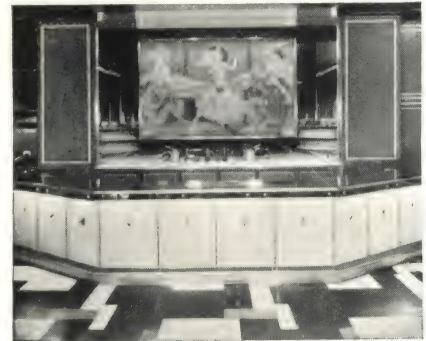


Safe Deposit Vaults



Products

Alleghey Metal and other
Alleghey Stainless Steels.



Modern Allegheny Metal Cocktail Bar

Alleghey Metal—Chemical and Physical Properties

Alleghey Metal is a smooth, lustrous 18-8 chromium-nickel alloy markedly immune to water, air or acid corrosion—manufactured pursuant to license from Chemical Foundation, Inc., under basic patents Nos. 1,316,817 and 1,339,378. It is malleable and ductile, permitting the widest range of design and application for architectural purposes—may be readily welded, annealed and soldered, drawn, spun, stamped, cast and machined.

It has an ultimate strength, when annealed, of 90,000 to 100,000 lbs. per sq. in. as compared to 50,000 to 60,000 lbs. for mild steel.

A moderate amount of cold working will increase the tensile strength to 125,000 lbs.

Finish

Alleghey Metal can be polished and buffed to any surface up to the smoothness of a mirror, giving the architect a wide range of contrasting effects from dull to brilliant. It can also be etched and tooled making possible striking ultra-modern decorative effects for interior or exterior building applications.

Ease of maintenance is illustrated by the fact that no cleaning fluids or powders are ever needed to keep it bright. Soap and water are all that is required to retain its original beautiful finish.



Building Trim

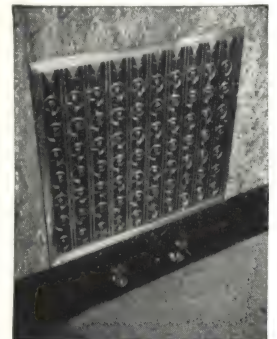
Fabrication

The entire fabricating technique of Allegheny Metal has been worked out and tested by the Allegheny Laboratories and the results published in our booklet, "The Fabrication of Allegheny Metal." Fabricators throughout the country have mastered the art of handling Allegheny Metal as a result.

The fabrication of Allegheny Metal, while readily accomplished, requires greater power, more efficient machinery, and skilled workmen to fashion products of this alloy. For this purpose you may obtain a dependable list of these experienced fabricators, who serve efficiently and inexpensively, by writing the ALLEGHENY STEEL COMPANY, Brackenridge, Pa.

Applications

Alleghey Metal combines utility with beauty. It gives to the architect a material of limitless building applications from ultra-modern interior treatment to polished building domes. Lobby decoration, elevator enclosures, window frames, metallic doors, bank vaults, loggia construction, are only a few representative applications where Allegheny Metal is ideal. Interior trim includes kick plates, mop strip, walls, wainscoting, columns, ornamental grille work. Exterior trim includes building entrances, window trim, finials, pilaster, cornice and peak decoration.



Radiator Grille

Warehouse Stocks

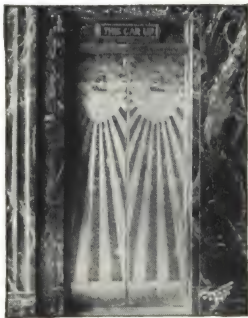
Alleghey Metal is easily available. Warehouse stocks are carried in the United States by:

Joseph T. Ryerson & Son, Inc., warehouses at Chicago, Cleveland, Milwaukee, St. Louis, Cincinnati, Detroit, Buffalo, Boston, Jersey City, Philadelphia.

American Brass & Copper Co., San Francisco, Oakland.

Union Hardware & Metal Co., Los Angeles.

TYPICAL APPLICATIONS OF ALLEGHENY STAINLESS STEEL IN THE ARCHITECTURAL FIELD



Elevator Doors



Elevator Cab



Walls and Wainscot



Repousse Entrance Door



Kick Plates and Door Trim



Building Trim



Metal Lobby



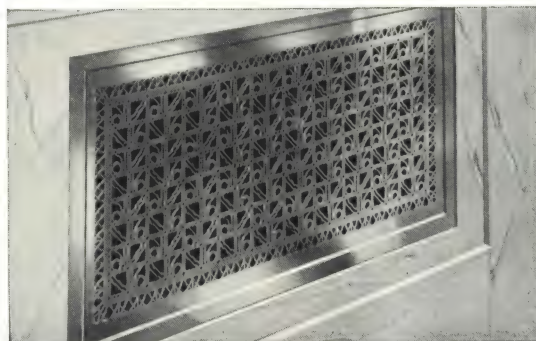
Etched Door



Residential Kitchen



Decorative Trim



Ornamental Grille Work



Allegheny Metal Bridge

ALUMINUM COMPANY OF AMERICA

Member of The Producers' Council, Inc.

Manufacturers of Alcoa Aluminum and Its Alloys

1844 Gulf Building
PITTSBURGH, PA.

SALES OFFICES

ALBANY, N. Y., 90 State Street
ATLANTA, GA., 1818 Rhodes-Haverty Building
BOSTON, MASS., 20 Providence Street, Park Square
BUFFALO, N. Y., 1880 Elmwood Avenue
CHICAGO, ILL., 520 No. Michigan Avenue
CINCINNATI, OHIO, Times Star Building
CLEVELAND, OHIO, 2210 Harvard Avenue
DETROIT, MICH., 3311 Dunn Road
FAIRFIELD, CONN., Boston Post Road
HARTFORD, CONN., Capitol Building, 410 Asylum Street
INDIANAPOLIS, IND., 716 Merchant's Bank Building
KANSAS CITY, MO., 2306 Power & Light Building

LOS ANGELES, CALIF., 1031 South Broadway
MILWAUKEE, WIS., 735 North Water Street
MINNEAPOLIS, MINN., 1345 Northwestern Bank Building
NEWARK, N. J., 1111 Academy Bldg.
NEW ORLEANS, LA., 915 Pere Marquette Building
NEW YORK, N. Y., 230 Park Avenue
PHILADELPHIA, PA., 2307 Fidelity-Philadelphia Trust Building
PITTSBURGH, PA., Gulf Building
ST. LOUIS, MO., 1825 Boatmen's Bank Building
SAN FRANCISCO, CALIF., 709 Rialto Building
SEATTLE, WASH., 1005 White Building
TOLEDO, OHIO, 1315 Ohio Bank Building
WASHINGTON, D. C., 606-612 Southern Building

For our pages on Aluminum Paint and Aluminum Windows, see File Index

Products

ALCOA ALUMINUM and ALCOA ALUMINUM ALLOYS for all architectural and ornamental metal work for exterior and interior purposes—Wrought, Cast, Extruded, Rolled, Drawn, etc., *in every form known to the metal working art.*

Our 232-page Handbook "Aluminum in Architecture," available on request, contains full information: Aluminum—What It Is, and Its First Architectural Applications; Characteristics of Aluminum and Aluminum Alloys as They Apply to the Building Industry; Applications of Alcoa Aluminum in the Building Industry; Designing, Fabricating and Finishing; Protection, Erection and Maintenance; Specifications; Tabular Data. Illustrated with 125 photographs and 22 plates.

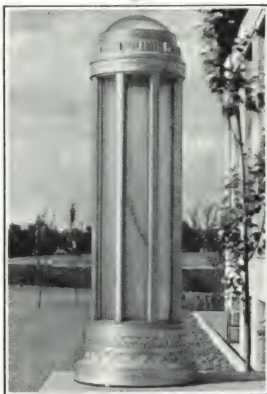


Qualities of Aluminum

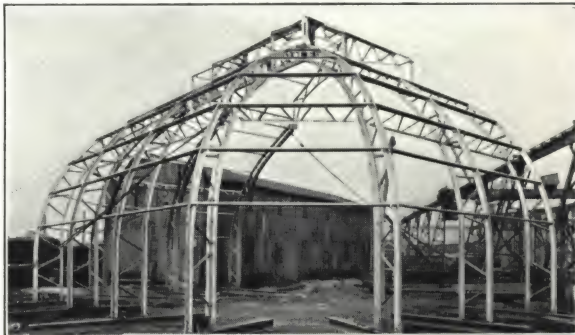
Our technical staff exercises rigid scientific control over every process in the production of Alcoa Aluminum and Alcoa Aluminum Alloys—from the mining of bauxite ore to the production of aluminum, and in many cases to the fabrication of finished forms. That is why *Alcoa* Aluminum is superior in quality. It resists corrosion, does not stain adjacent surfaces, is strong and easy to work. It can be cast accurately. It comes in many finishes; in castings, extruded shapes, corrugated sheet, tubing and every other form you can possibly require.

Aluminum is the lightest of all metals used in architecture, weighing only one-third as much as others commonly used. It is therefore cheaper to ship and easier to handle and erect.

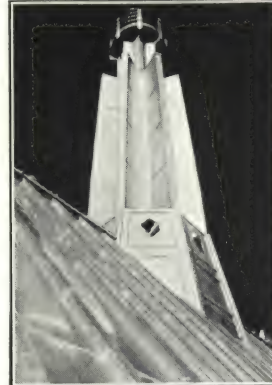
TYPICAL ALCOA ALUMINUM INSTALLATIONS



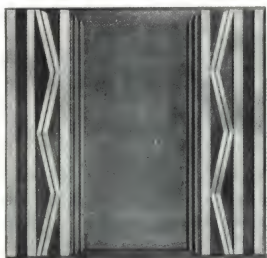
An Ornamental Lamp



Framework for Large Botanic Garden



Beacon Tower
Aluminum Framing and Sheet



Depleted and Highlighted
Spandrel



Escalator of Aluminum



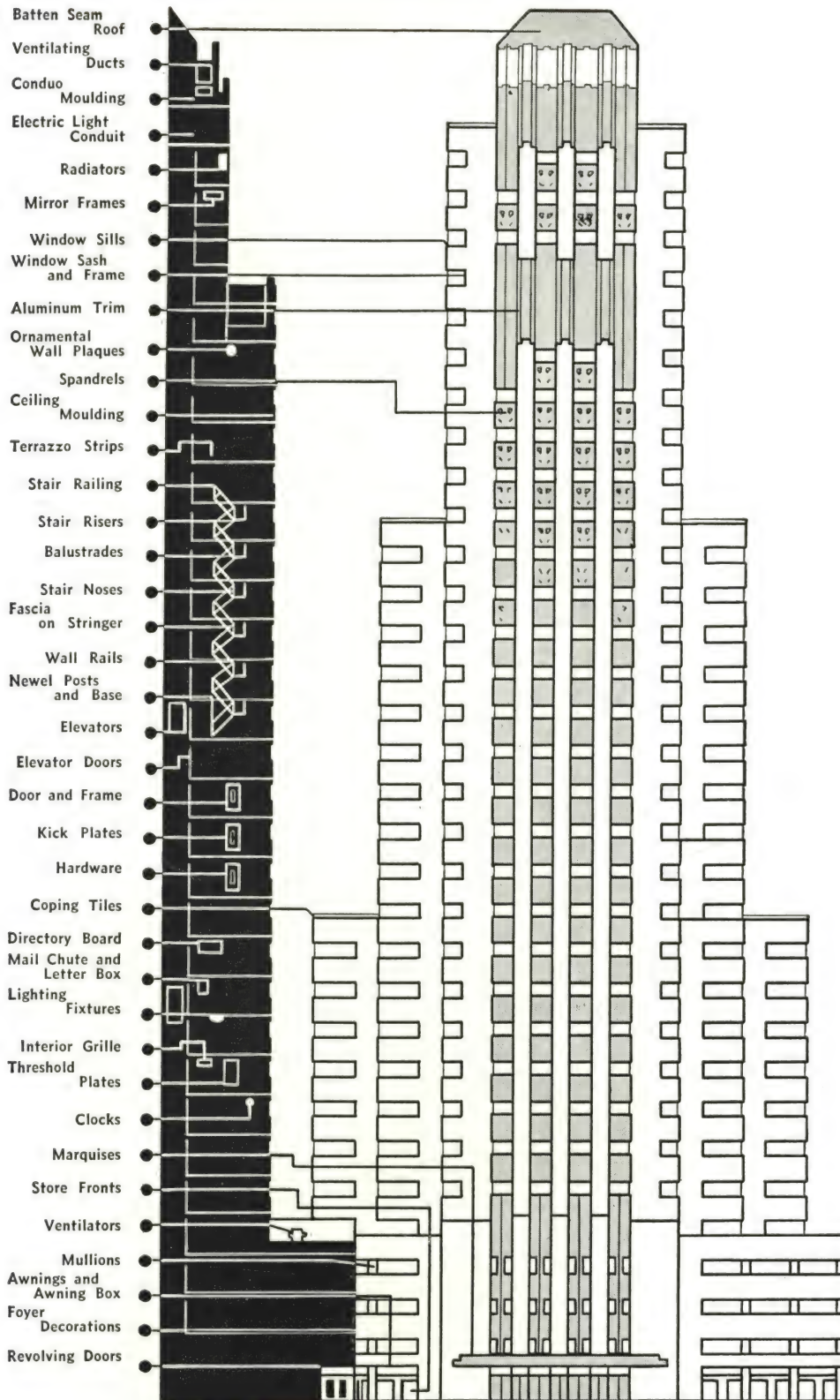
Spandrel with Ornament
Covering Ventilating Duct

**ALCOA ALUMINUM**

In a Modern Building
Floor by Floor

ADVANTAGES

Light Weight
Strength
Corrosion-Resistance
Will Not Stain
Will Not Crack
Easily Worked
Ductile
Low Cost
High Salvage Value

**ALCOA ALUMINUM AVAILABLE IN ALL COMMERCIAL FORMS**

The light strong alloys of Alcoa Aluminum come in sheets, plates, extruded shapes, castings suitable for spandrels, window frames, elevator doors, grilles, store-fronts, etc. Other forms include tubing, forg-

ings, wire, rivets, bolts, nails, and screw machine products. Design and construction with Alcoa Aluminum is simplified because of the fact that this metal is available in every form known to the metal-working art.

THE AMERICAN BRASS COMPANY

Manufacturers of Extruded Bronze, Brass, Copper and Nickel Silver for Ornamental and Structural Purposes; Wire, Rods and Tubes
Sole Manufacturers of Everdur Metal—Sheets, Wire, Rods, Tubes

GENERAL OFFICES
WATERBURY, CONNECTICUT

ANSONIA, CONNECTICUT
BUFFALO, NEW YORK

MANUFACTURING PLANTS
TORRINGTON, CONNECTICUT
DETROIT, MICHIGAN

WATERBURY, CONNECTICUT
KENOSHA, WISCONSIN

CANADIAN PLANT: ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONT.

Products

ANACONDA ARCHITECTURAL BRONZE, BRASS, COPPER and NICKEL SILVER for ornamental and structural purposes, in Extruded Shapes and Drawn Shapes, Sheets, Rods and Tubes for fabrication of ornamental and structural metal work, including Cornices, Pilasters, Grilles, Wickets, Counters, Door and Window Trim, Screens, Hand Rails, etc.

For pages on Anaconda Sheet, Roll and Strip Copper; Brass and Copper Pipe and Copper Water Tubes; and "Electro-Sheet" Copper for Built-Up Asphalt Roofs, see File Index.

Extruded Architectural Shapes

Copper alloys which can be hot worked are successfully wrought into finished shapes by the extrusion process, which results in a section homogeneous in texture, strong and durable, and in every way superior to castings. Extruded shapes are characterized by their dense structure and unusually smooth surface. They are entirely free from the pocked surfaces and porosities found in sand castings. The edges are sharp and clean.

Dies—A large number of dies, made up during more than 30 years for the production of extruded bronze shapes from designs by many leading architects, have been released for general use. The availability of these dies often eliminates the expense of special die-making, reducing the cost of the finished metal work.

An illustrated catalog showing dimensional cross-sections of these stock dies is in course of preparation and will be available to architects during the early part of 1936.

Color of Extruded Bronze

ANACONDA Architectural Extruded Bronze Shapes possess a natural golden color. After exposure the metal darkens and assumes the characteristic color of bronze. The metal can be artificially colored to obtain any desired effect. Extruded bronze is successfully matched in color with bronze sheets and castings.

Cold Drawn Architectural Shapes

When light mouldings and shapes are required in gauges and alloys not extrudable, the cold drawn process is used. Seamless tubing with plain and irregular cross-sections are also produced by this method.

A wide range of alloys can be worked by this method, offering color combinations not possible with extruded shapes.



These cold drawn shapes are used for numerous architectural purposes, such as interior trim, window frames, showcases, store fronts, etc.

A catalogue illustrating the dimensional cross-sections of the thousands of cold drawn shapes for which dies are available,

without additional tool cost, is offered to architects and draftsmen.

White Forging Metal

AMBRAC Metal is successfully hot forged in the same manner as is iron and steel. This alloy, composed principally of copper and nickel, is white clear through and combines great strength with unusually high resistance to corrosion. Unlike other high strength white metals, AMBRAC is not refractory, but can be worked almost as easily as brass.

Metal Grilles

Fabricators are producing ANACONDA Brass, Bronze and Nickel Silver grilles of all types, in both cast and perforated form. The use of the perforated grille, stamped from a heavy sheet of metal, has increased greatly, since this type of grille has an attractive appearance and is produced at considerably lower cost. The products of leading grille manufacturers are available in ANACONDA Brass, Bronze and Nickel Silver, the basic materials being supplied by THE AMERICAN BRASS COMPANY in ingot and sheet form.

Bronze Weatherstrips

Anaconda Bronze is standard with leading manufacturers of metal weatherstrips. Bronze weatherstrips cannot rust, cannot disintegrate. Strong and tough, they have permanent spring qualities and offer greater resistance to accidental damage.

Terrazzo Dividing Strips

With the increased popularity of terrazzo work, considerable attention has been given the development of strips that would serve well the double function of setting off the terrazzo design and of minimizing the danger of cracking from expansion and contraction. Leading strip manufacturers are fabricating their product from ANACONDA Brass and Nickel Silver.

Manufactured Forms

ANACONDA Architectural Bronze, Brass and Nickel Silver are produced in the form of rods, bars, sheets, drawn shapes and extruded shapes, and casting ingots, fully meeting the requirements of designers and fabricators of fine ornamental metal work.



EVERDUR METAL—SHEETS, WIRE, RODS, TUBES

"EVERDUR" is a registered trade-mark identifying products of THE AMERICAN BRASS COMPANY made from alloys of copper, silicon and other elements.

Everdur Metal

EVERDUR METAL is recommended for use wherever service conditions require a metal combining the strength of steel with high resistance to corrosion.

**General Properties**

EVERDUR is golden bronze in color. It has the strength of medium carbon steel, is non-rusting, and offers high resistance to a large number of corroding agents (corrosion-resistance data sent on request).

EVERDUR can be cast, rolled, drawn, spun, forged, pressed and welded, and is worked either hot or cold. It is unique among high-strength, non-ferrous metals in that it is readily welded by all commonly used methods.

EVERDUR makes sound castings and possesses good machining qualities. It is available in all commercial shapes.

Tanks and Boilers

EVERDUR, with its high strength and excellent corrosion resisting properties, is an ideal metal to use for water storage and process tanks of welded construction.

EVERDUR tank plates are supplied by THE AMERICAN BRASS COMPANY in any size and thickness up to 4200 pounds in weight for the fabrication of large welded or riveted tanks.

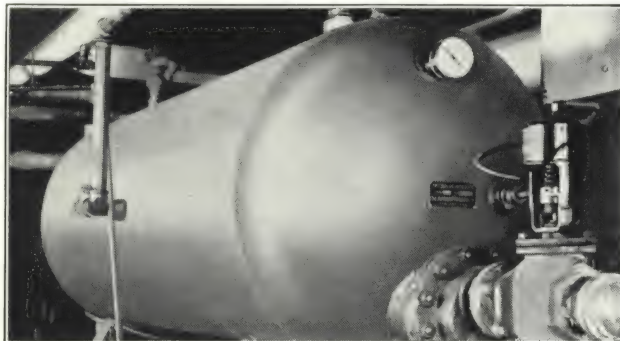
EVERDUR tanks in service today range in size up to 20,000 gallons. Twenty-seven concerns are prepared to quote upon and produce EVERDUR tanks to individual specifications. Names on request.

The majority of manufacturers of automatic storage water heaters for domestic use—both gas and electric—now furnish their heaters equipped with welded EVERDUR tanks. The ease with which EVERDUR lends itself to fabrication by welding has made these rust-proof, EVERDUR tanked heaters available today at moderate prices.

Air Conditioning Equipment

EVERDUR Metal has been used with marked success for fans and blowers, ducts, humidifiers (air washers) and for various cast and wrought parts of other equipment items subject to corrosive influences.

Wherever corrosion reduces the service life of rustable metals to a point where they are uneconomical, EVERDUR is offered in many cases as the ideal material. Because of its strength and welding properties, it may be substituted for steel fabricated by substantially the same methods, and with the same equipment.



Patterson-Kelley Welded Everdur Storage Water Heater Made by the Patterson-Kelley Company, Incorporated, New York, N. Y.

Everdur Electrical Conduit

EVERDUR metal conduit is offered for use wherever corrosive conditions are such as to render rustable conduit unsatisfactory from the standpoints of durability and safety. EVERDUR Electrical Conduit—EMT (electrical metallic tubing) and RC (rigid conduit)—is listed and labeled by Underwriters' Laboratories. It is seamless drawn to accurate sizes for use with EVERDUR Fittings which are readily obtainable in standard designs.

Smoke Washers, Ventilating Apparatus, Skylight Frames, Etc.

Because of its high resistance to corrosion, EVERDUR is used to advantage for smoke and soot washers. It has also been found extremely practicable for ventilating ducts, floor drains, nuts, bolts, screws, etc., subjected to the corrosive conditions encountered in battery rooms, electroplating establishments, railroad terminal sheds, chemical plants, etc. In the last few years EVERDUR has been used with marked success for skylight frames and supports under conditions so extreme that less durable materials failed in a short time.



Ventilating Duct of Everdur Sheet Metal

Terra Cotta Anchors, Etc.

Due to the high strength, toughness and ductility of wrought EVERDUR, and to the fact that these properties do not diminish even though the metal is constantly subject to the deteriorating influence of water and moisture, EVERDUR is being used for terra cotta anchors, window cleaners' safety anchors and bolts, ceiling hangers, etc.



Drop-forged Everdur Window Cleaner's Safety Anchor

Roofing Nails

EVERDUR is being employed on an increasing scale for nailing slate, heavy tile and other materials of considerable weight. EVERDUR nails possess the strength of steel nails, as well as immunity to rust and high resistance to corrosion. They can be driven into hard woods or other materials without bending in the shank or flattening at the points.

Consultation Service

An Anaconda engineer will be pleased to consult with architects desiring further information on the many applications of EVERDUR in modern buildings.

THE AMERICAN ROLLING MILL COMPANY

Makers of Stainless Steel Sheets, Strip and Plates for Architectural Construction, Equipment, and Appliances

EXECUTIVE OFFICES

307 Curtis Street, MIDDLETOWN, OHIO

DISTRICT OFFICES

ATLANTA, GA., 1437 The Citizens & Southern National Bank Building
BOSTON, MASS., 201 Devonshire Street
BUFFALO, N. Y., 509 Seventeenth Court Street Building
CHICAGO, ILL., 1122 Straus Building

CLEVELAND, OHIO, 1516 B. F. Keith Building
DALLAS, TEX., 1110 Santa Fe Building
DETROIT, MICH., 5-261 General Motors Building
KANSAS CITY, MO., Sheffield Station
MIDDLETOWN, OHIO, 703 Curtis Street

NEW ORLEANS, LA., P. O. Box 480
NEW YORK, N. Y., 50 Church Street
PHILADELPHIA, PA., 2020 Lewis Tower
PITTSBURGH, PA., 1632 Oliver Building
ST. LOUIS, MO., 1724 Ambassador Building
SAN FRANCISCO, CAL., 540 Tenth Street

Distributors in Principal Cities Can Supply Contractors' Requirements Promptly

Armco Stainless Steels

There are several different grades of stainless steels, each intended for a specific purpose. Two of these grades, however, fully meet the requirements of most architectural work. In Armco 18-8 and Armco 17 you may have the most widely-used types of the different iron-chromium and iron-chromium-nickel steels that have in recent years come into demand for building construction. Both grades rank high in corrosion resistance, workability, tensile strength, and endurance at elevated temperatures. Armco Stainless Steel sheets also are made in the various surface finishes desired by architects as well as by fabricators of building equipment and appliances.



At elevated temperatures up to approximately 1550° F., Armco 17 offers an unusually attractive combination of heat and corrosion-resistance. Furnace atmospheres have very little effect on the metal, while its obstinate resistance to sulfur fumes and to moisture is remarkable.

Armco 17 Stainless Steel is ductile and can readily be formed to complex architectural details when the proper technique is employed. When polished, its beautiful clear lustre and silver color are exceedingly attractive.

Six Surface Finishes—One for Every Use

Armco Stainless Steel sheets, strip and plates may be specified in any of these different surface finishes, each of which is applicable to a specific use:

No. 1—Hot-Rolled, Annealed and Pickled. A white pickled finish.

No. 2-D—Dull Full Finish: Hot-Rolled, Annealed, Cold Rolled and Pickled. A smooth, dull, cold-rolled finish.

No. 2-B—Bright Full Finish: Hot-Rolled, Annealed, Pickled and Cold Rolled. A smooth, bright, cold-rolled finish.

No. 4—Standard Polish. A bright, satin finish with very fine polish lines.

No. 6—Standard Polish, Tampico Brushed. A soft-lustred, velvety finish.

No. 7—High Lustre Polish. A smoothly polished and buffed finish.

Where to Use in Architecture

Architects have discovered so many appropriate uses for stainless steels in recent years that it would be virtually impossible to list all here and treat them adequately. In general, it might be said that Armco Stainless Steel sheets, strip, and plates may ideally be employed for all flat or formed construction where corrosion-resistance, heat-resistance, and permanent attractiveness are desired. With a working knowledge of the properties and qualities of Armco 18-8 and Armco 17 in mind, the architect may design any detail, motif, ornament and ensemble that is reproducible in flat-rolled metals. This, too, with wide latitude in conception and execution.

Write for This Valuable Handbook

You should have our comprehensive handbook, "Armco Stainless Steel Alloys." Here is a thorough interpretation of the compositions, properties, characteristic finishes, and fabricating behavior of these useful metals. It will be a valuable reference work and guide book and a handsome addition to your library on materials. Send for a copy, free to practicing architects.

Convenient Warehouse Stocks

Armco Stainless Steels may be ordered from ample and convenient warehouse stocks. Just outline your special needs to the office nearest you listed at the top of this page.

Long Metallurgical Background

Into Armco Stainless Steels have been poured more than thirty years of metallurgical knowledge. The different grades and finishes are as flawless as minds, hands and machines can produce. No effort, time and money have been spared to provide flat-rolled stainless steels that measure up to the highest and most exacting architectural standards.

Armco 18-8 Grade

An iron-chromium-nickel steel made especially for architectural uses from which utmost resistance to corrosion is required. Armco 18-8 contains approximately 18% chromium and 8% nickel. Good fabricating qualities and well-suited for shaping to intricate designs.

Armco 18-8 is austenitic in nature, essentially non-magnetic, and cannot be hardened by heat-treatment. It consistently withstands corrosive attack in the atmosphere, and is also non-corrodible in many chemical solutions.

This grade is extraordinarily tough and possesses exceptional ductility. It can be formed severely in the cold state. Its great strength is retained even at elevated temperatures, and it has excellent oxidation resistance up to approximately 1600° F.

Armco 18-8 is recommended for all architectural uses where beauty of surface, ease of cleaning, and permanence of color are demanded.

Armco 17 Grade

An iron-chromium steel containing approximately 17% chromium. This type of stainless steel is also non-hardenable, like the 18-8 grade, but is essentially ferritic in nature and magnetic. In the polished finish, Armco 17 offers staunch resistance to atmospheric corrosion, and is immune from attack by many dilute organic acids and by dilute salt solution. It is especially well endowed for resistance to nitric acid.

CHASE BRASS & COPPER CO.

—INCORPORATED—

SUBSIDIARY OF KENNECOTT COPPER CORPORATION
WATERBURY, CONN.

NEW YORK, N. Y.
BOSTON, MASS.
NEWARK, N. J.
PHILADELPHIA, PA.

BALTIMORE, MD.
PITTSBURGH, PA.
CINCINNATI, OHIO
CLEVELAND, OHIO

CHASE WAREHOUSES
DETROIT, MICH.

CHICAGO, ILL.
MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
ST. LOUIS, MO.

NEW ORLEANS, LA.
LOS ANGELES, CALIF.
SAN FRANCISCO, CALIF.
SEATTLE, WASH.

For Other Chase Pages, see File Index

ECONOMY OF DESIGNING WITH CHASE EXTRUDED SHAPES In Architectural Bronze and Nickel Silver

Why These Shapes Are Economical

It is more economical to use extruded bronze and nickel silver in place of cast or drawn shapes. By means of the extrusion process shapes may be formed to a minimum thickness which reduces the tonnage considerably. This results in a substantial savings in costs when a quantity of material is used. The extrusion process also makes it possible to get sharper and cleaner profiles than can be obtained with cast or drawn bronze. This helps toward faithful execution of even the most intricate designs.

On all new extruded shapes it necessary to add a special charge to cover the cost of new dies. You can eliminate this extra cost by including only standard extruded shapes in your specifications. There are hundreds of Chase Standard sections available in both Architectural Bronze and Nickel Silver. You



will find that these standard sections are particularly adaptable to original bronze designs.

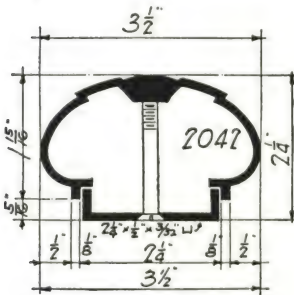
"Modernizing Main Street"

Chase standard extruded shapes in Architectural Bronze and Nickel Silver are particularly adapted to remodeling work. Right now in the midst of the "Modernizing Main Street" movement, the architect can save time and money by specifying these standard sections. There is a wide range of shapes, designed especially for store front construction. Also cornices, door jambs, hand rails and all types of mouldings for interior decorative trim. A complete knowledge of Chase extruded shapes will help the architect to take advantage of standard sections on all types of Architectural metal work.

A FEW TYPES OF SHAPES AND USES

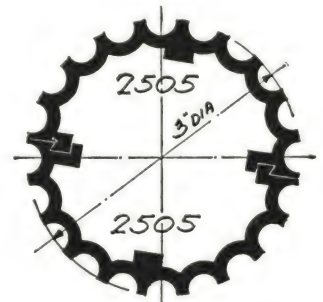
Hand Rails

Here is a detail drawing of Chase Hand Rail No. 2042. This is representative of the attractive hand rails available as standard sections. The design of these hand rails is broad enough to permit the architect to select the hand rail needed for a particular style railing. These shapes are available in both bronze and nickel silver.



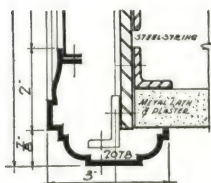
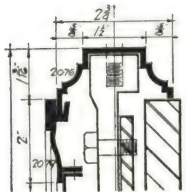
Pilasters

This detail illustrates the method used to produce full round pilasters using two sections of a reversible shape. An assembly of this kind is especially effective when smaller sections are used to form colonettes in conjunction with other members.



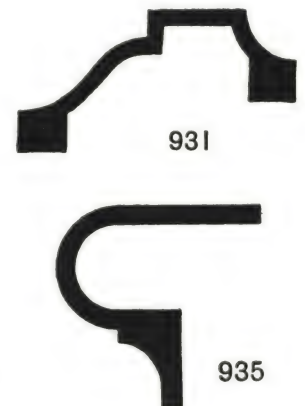
Railing Bases and Stair String Mouldings

The detail drawing at left center illustrates a section of top of face string showing application of Chase Standard Shapes No. 2076 and 2079. The detail drawing at lower left illustrates a section of bottom of face string and soffit moulding showing application of Standard Shape No. 2078. These shapes are available in both bronze and nickel silver. There is also a complete line of standard extruded shapes for railing spindles.



Miscellaneous Shapes

There are several hundred miscellaneous standard shapes which can be applied to original bronze designs. This effects a saving in both time and cost. Many of these shapes have two or more applications. For example: Chase Shape No. 935 was used as a window stool nosing and it was also used to produce an attractive bronze trim. Chase Shape No. 931 has been effectively used as a panel moulding.



COMPLETE CATALOG OF EXTRUDED SHAPES

The new Chase Catalog of Architectural Bronze and Nickel Silver Extruded Shapes has been prepared to help the architect in designing bronze work. Illustrations, working drawings and specifications provide tools from which designs may be detailed. Assemblies of standard shapes can be made with direct tracings from the full-size cross sections. If you are

not entirely familiar with the possibilities of extruded bronze and nickel silver shapes, we will be glad to answer any questions and send samples of the actual materials. If you would like a copy of this helpful catalog, please write to Chase Brass & Copper Co., 3 Malvey St., Waterbury, Conn.

BOHN ALUMINUM & BRASS CORPORATION

Manufacturers of Extruded Architectural Shapes and Architectural
Sand Castings

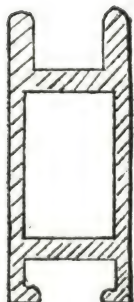
DETROIT, MICH.



Detroit Post Office

Exterior and windows of Bohnolloy extruded bronze. Bohnalite extruded aluminum predominates interior. Robert O. Derrick, Inc., Architects. General Bronze Corporation, metal work. Photo by Grossman-Knowling, Inc.

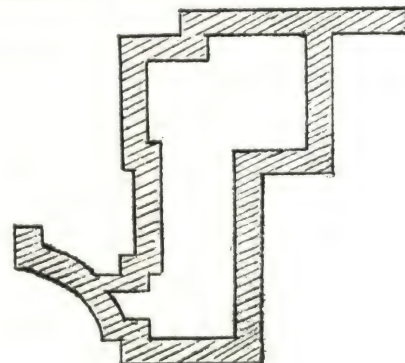
INTEGRALLY EXTRUDED HOLLOW SHAPES **An Exclusive and Revolutionary Bohn Extrusion Development**



Again our engineering and research development leads the field. Extruded hollow shapes, all of one piece are now available to the trade.

It is no longer necessary to accept the substitutes of lock seams, dovetail pieces or welded seams.

The tremendous advantages are obvious, typical cross sections of production specimens are shown in the margin.



Bohnalite extruded aluminum shapes are manufactured for the architectural metal trade under rigid metallurgical and mechanical control throughout the entire process of manufacture.

Virgin metals are alloyed to produce the various aluminum alloys recognized for architectural purposes. Each step in the preparation and melting of these alloys is subject to strict laboratory supervision to insure a finished product of the highest possible grade.

Bohnalite alloys are highly resistant to atmospheric corrosion, are colorless and will not stain or streak adjoining surfaces.

The danger of cracking or splitting due to internal strains is absent, as Bohnalite alloys will return to their original structure after expansion or contraction.

Bohnalite alloys are approximately one-third the weight of other commonly used architectural metals, with the consequent economy of material cost, shipping, handling and erecting.

Bohnolloy extruded bronze shapes are produced faithfully and true to design. Profiles are sharp and clear-cut, and dimensions are accurate and uniform.

The dense crystalline structure of Bohnolloy extruded bronze shapes insures strength of material and smooth, easily finished surfaces.

Straightening operations are given special care, insuring a minimum of fabricating cost to the user.

Bohnolloy No. 55, a standard architectural bronze has a tensile strength in excess of 45,000 pounds per square inch. Bohnolloy No. 56-A, an exclusive development of the Bohnolloy series, is a high tensile, corrosion resisting, easy welding bronze with an ultimate average tensile strength of 60,000 pounds per sq. in., or more.

Extensive equipment and large production capacity insures fabricating and erection schedules being maintained and makes prompt service possible in emergencies.

Standard equipment is available at present to produce Bohnalite and Bohnolloy extruded shapes in sizes up to

eight inches in overall dimensions and in lengths in excess of twenty feet.

The ever-increasing list of major building projects in which Bohnalite or Bohnolloy extruded shapes have an important part is direct testimony to the skill and

experience of a completely staffed production personnel. A well-informed architectural metal department is available for consultation. Inquiries are solicited.

Bohnalite Aluminum

Bohnalite architectural castings are manufactured with quality, beauty and utility up-permost, under rigid specifications. A dense crystalline structure of virgin metals offers the maximum resistance to atmospheric corrosion and inter-crystalline corrosion.

Various standard finishes are available and many striking and beautiful effects may be obtained.

Bohnalite alloys may be executed in very intricate design and detail, being extremely ductile and adaptable to fine execution.

Bohnalite or Bohnolloy Installations in Recent Buildings

Waldorf Astoria Hotel
New York Telegram Building
Key West, Florida Post Office
U. S. Public Health Service Building
Kill Van Kull Bridge
Cincinnati Union Terminal
Cincinnati Times Star Building
Attica Prison
Greensboro, N. C., Post Office
Altoona, Pa., Post Office
U. S. Botanical Garden, Washington, D. C.
Lincoln Savings Bank, N. Y.
Montgomery, Ala., Post Office
Worcester Art Museum
Pittsburgh Post Office
Bankers Trust Co., New York
Soloman Juneau High School
Providence County Court House
Jefferson County Court House, Texas
Benjamin Franklin Memorial
Detroit Post Office
Post Office Dept. Admin. Bldg.
Trenton Post Office
U. S. Dept. of Labor, Washington, D. C.
Federal Reserve Bank Building, Philadelphia, Pa.
U. S. Naval Hospital, Philadelphia, Pa.
Penn. R. R., Newark, N. J.
Chicago, Milwaukee & St. Paul R. R.
Portland, Ore., Post Office
Youngstown, Ohio, Post Office
Radio City, Rockefeller Center
Downtown Post Office, New York, N. Y.
University Housing Project, Atlanta, Ga.
Archives Building, Washington, D. C.
State Capitol, Bismarck, N. D.

Architectural Castings

Bohnalite alloys have a specific gravity of 2.7 and in comparison with other commonly used architectural metals, their weight is approximately one-third.

The advantage gained by this saving in weight results in a favorable comparative material cost, and in addition a substantial economy in transportation handling and erection costs.

Typical examples of Bohnalite architectural castings are found in spandrels, copings, sills, crestings, grilles, entrances, newel posts and balustrades, cornices and tablets.

MEMORANDA

THE INTERNATIONAL NICKEL COMPANY, INC.

Monel Metal and Rolled Nickel and Allied Products

Executive Offices, 67 Wall Street, NEW YORK, N. Y.

SOURCES OF SUPPLY

(Warehouse Stocks)

ATLANTA, GA., J. M. Tull Metal & Supply Co., Inc., 285 Marietta Street
BUFFALO, N. Y., Whitehead Metal Products Co. of N. Y., Inc., 254 Court Street
CAMBRIDGE, MASS., Whitehead Metal Products Co. of N. Y., Inc., 235 Bridge Street
CHICAGO, ILL., Steel Sales Corporation, 129 So. Jefferson Street
CINCINNATI, OHIO, Williams & Co., Inc., 2118 Spring Grove Avenue
CLEVELAND, OHIO, Williams & Co., Inc., 1748-1756 E. 22nd Street
DENVER, COLO., Hendrie & Bolthoff Mfg. & Supply Co., 1621 17th Street
DETROIT, MICH., Steel Sales Corp., 4150 St. James Street
LOS ANGELES, CALIF., Pacific Metals Co., Ltd., 1400 So. Alameda Street
MILWAUKEE, WIS., Steel Sales Corp., 647 West Virginia Street
MINNEAPOLIS, MINN., Steel Sales Corp., 529 So. 7th Street
NEWARK, N. J., Whitehead Metal Products Co. of N. Y., Inc., 215 Frelinghuysen Ave.

NEW YORK, N. Y., Whitehead Metal Products Co. of N. Y., Inc., 304 Hudson Street
PHILADELPHIA, PA., Whitehead Metal Products Co. of N. Y. Inc., 725 Arch Street
PITTSBURGH, PA., Williams & Co., Inc., 901 Pennsylvania Avenue
ST. LOUIS, MO., Steel Sales Corp., 4067 Park Avenue
SAN FRANCISCO, CALIF., Pacific Metals Co., Ltd., 3100 19th Street
SEATTLE, WASH., Eagle Metals Co., 21 Spokane Street
MONTREAL, QUE., CANADA, Robert W. Bartram, Ltd., 277 Duke Street
TORONTO, 2, ONTARIO, CANADA, Peckover's Limited, 77 Front Street, E.
VANCOUVER, B. C., CANADA, Wilkinson Co., Ltd., 190 W. Second Avenue

Monel Metal

Monel Metal is a registered trade-mark applied to an alloy containing approximately two-thirds nickel and one-third copper. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.



Available Forms

Standard Sheets	Castings
Full Cold Rolled Sheets	Wire
Full Cold Rolled Strip	Wire Cloth
Hot Rolled Rods	Wire Rope
Cold Drawn Rods	Tubing
Hot Rolled Flats	Shot
Hot Rolled Plates	Billets
Forgings	Ingot
Special Shapes (Angles, Channels, etc.)	
Accessories (Bolts, Nuts, Screws, Nails, Tacks, etc.)	

An important factor of any metal in architectural use is its adaptability to various methods of fabrication and the variety of shapes and forms in which the metal may be employed. Monel Metal can be fabricated in every manner known to the art with the sole exception that it cannot be extruded. It may be forged, cast, inlaid, turned, machined, drawn, rolled, engraved, etched, and cloissone enameled. In short, the entire art of the metal craftsman can be employed in developing decorative or utilitarian products of Monel Metal as long as extruded patterns are not demanded by the designer. For details on the many shapes and forms in which Monel Metal is available, we suggest that you communicate with the nearest source of Monel Metal (listed above).

Properties of Monel Metal

Monel Metal is classified as a distinctive white metal, more closely akin to white precious metals in color and reflectivity than to any other well-known group of metals. Monel Metal may be effectively finished in a variety of ways, ranging from the sand-grained surface of unfinished castings to a mirror polish with intermediate finishes in great variety. The following summary of Monel Metal gives a general idea of the unique combination of properties in Monel Metal which point to its superiority for both domestic and institutional Food Service and Hospital Equipment.

1. Absolutely rust-proof.
2. Resists corrosion by food juices and fruit acids.
3. Strong as steel, tougher than steel.
4. Easy to clean; therefore sanitary.
5. Beautiful appearance; has color of platinum.
6. Durable-proven by over 20 years of service.
7. Easily fabricated.

Monel Metal in the Home and Public Buildings

The silvery beauty of Monel Metal and its unique combination of physical properties are responsible for its use in a wide variety of architectural applications.

In modern hotels and restaurants Monel Metal is extensively used for such food service equipment as cook tables, serving counters, dishwashing machines, etc. A 15-page illustrated booklet entitled, "The Selection of Food Service Equipment"

will be of interest to architects who are planning hotels or restaurants.

In hospitals Monel Metal is used for food service equipment, service pantries, nurses' stations, hospital furniture, clinical equipment, and hospital utensils. Hospital laundries are usually equipped with Monel Metal washing machines. A 12-page fully illustrated booklet entitled, "The Selection of Hospital Equipment," describes the many uses of Monel Metal in the above departments.

In the home Monel Metal is principally used for kitchen and pantry sinks, cabinet sinks and working tops, automatic water heater tanks and range boilers. See index for other pages giving details of above items.

In public buildings, Monel Metal is used for ornamental metal work, such as elevator doors, grilles, trim, railings, gates, etc.

Architectural Publications

Practical Design in Monel Metal (A.I.A. File No. 15-G)—A complete manual for architects and metal craftsmen. Describes the properties of Monel Metal, its personality and the methods for working it. Richly illustrated with photographs and detailed drawings showing designs for ornamental and useful applications of Monel Metal.

Modern Domestic Service Equipment (A.I.A. File No. 35 C-1)—An architect's manual on the use of Monel Metal equipment for household and institutional kitchens, pantries and laundries. Includes specification data for various types of equipment.

Catalog—INCO Standardized Monel Metal Sinks and Cabinet Tops (A.I.A. File No. 29-H-6)—All models are illustrated with full information on dimensions, plans and specification data.

Hot and Cold Water Storage Tanks of Monel Metal (A.I.A. File No. 29-D)—Detailed information and data on "Whitehead" range boilers, automatic storage heaters, water softeners and large tanks (125 to 1000-gallon capacity).

Safeguarding Screen Installations (A.I.A. File No. 35-P-1)—For architects who meet screening problems—complete information on the new "AGELESS" screen cloth that eliminates discoloration troubles. Includes detailed construction drawings and specifications data for window screens, screen doors, porch screens.

Three Miles of Monel Metal Expansion Joints (A.I.A. File No. N-7-C)—An engineer of the company who fabricated the expansion joints for the Cleveland Union Terminal Building explains why they were made of Monel Metal and how they were installed. Detailed drawings are included.

List B of Monel Metal Literature—A complete list of booklets covering information on Monel Metal, Rolled Nickel and Allied Products, will be sent to you upon request. This covers both technical and non-technical literature as well as working instructions.

Specifications

The architect will be interested to know that Monel Metal is generally referred to in Government Specifications as "copper nickel alloy," "non-corrodible metal," and "non-corrosive alloy." Detailed specifications covering Monel Metal are available from the Government Printing Office and International Nickel. They are referred to as Federal Specification QQC-541 and Navy Department Specification 46-M-7e.

Other International Nickel Pages

Besides this page on Monel Metal, THE INTERNATIONAL NICKEL COMPANY, INC., has prepared for the use of the architect, other pages covering the use of Monel Metal in:

Built-in Kitchen Cabinets; Kitchen Sinks; Water Heaters; Range Boilers; and Hot Water Storage Tanks.

For the location of these pages, refer to the File Index.

REVERE COPPER AND BRASS INCORPORATED

EXECUTIVE OFFICES AND GENERAL SALES DEPARTMENT

230 Park Avenue, NEW YORK, N. Y.

BALTIMORE DIVISION, Baltimore, Md.
BALTIMORE TUBE CO. DIVISION, Baltimore, Md.

DIVISION OFFICES AND MILLS

MICHIGAN DIVISION, Detroit, Mich.
ROME DIVISION, Rome, N. Y.

ATLANTA, GA., 911-912 Rhodes-Haverty Bldg.
BOSTON, MASS., United Shoe Machinery Bldg.,
138-164 Federal St.
CINCINNATI, OHIO, 2616 Carew Tower
CLEVELAND, OHIO, 1127 Midland Bldg.
DALLAS, TEX., 804 Tower Petroleum Bldg.

DISTRICT SALES OFFICES
GRAND RAPIDS, MICH., 922-923 Grand Rapids National Bank Bldg.
LOS ANGELES, CALIF., 124 West Fourth St.
MILWAUKEE, WIS., 626 E. Wisconsin Ave.
MINNEAPOLIS, MINN., 724 Metropolitan Bank Bldg.
NEW ORLEANS, LA., 437 Decatur St.

NEW YORK, N. Y., 75 E. 45th St.
PHILADELPHIA, PA., 17th and Sansom Sts.
PITTSBURGH, PA., 727 Gulf Bldg.
PROVIDENCE, R. I., 1215 Industrial Trust Bldg.
ST. LOUIS, MO., 1010 Pine St.
SAN FRANCISCO, CALIF., 562 Russ Bldg.
SEATTLE, WASH., 317-318 Pioneer Bldg.

Products

ARCHITECTURAL METALS in Sheets, Extruded and Drawn Shapes and Tubes; REVERE 60 BRONZE, REVERE 85 BRONZE, and REVERE 90 BRONZE SHEETS; NICKEL SILVER SHEETS; COPPER and BRASS SHEETS.

ARCHITECTURAL BRONZE, BRASS, COPPER, NICKEL SILVER and ALUMINUM EXTRUDED SHAPES, DRAWN SHAPES; BARS, CHANNELS, ANGLES; ROUND, SQUARE, RECTANGULAR and SPECIAL SHAPED TUBES for architectural use.

These materials are sold to fabricators of ornamental and structural metal work for use in doors, windows, entrances, counters, screens, grilles, hand rails, soffits, pilasters, cornices, etc.

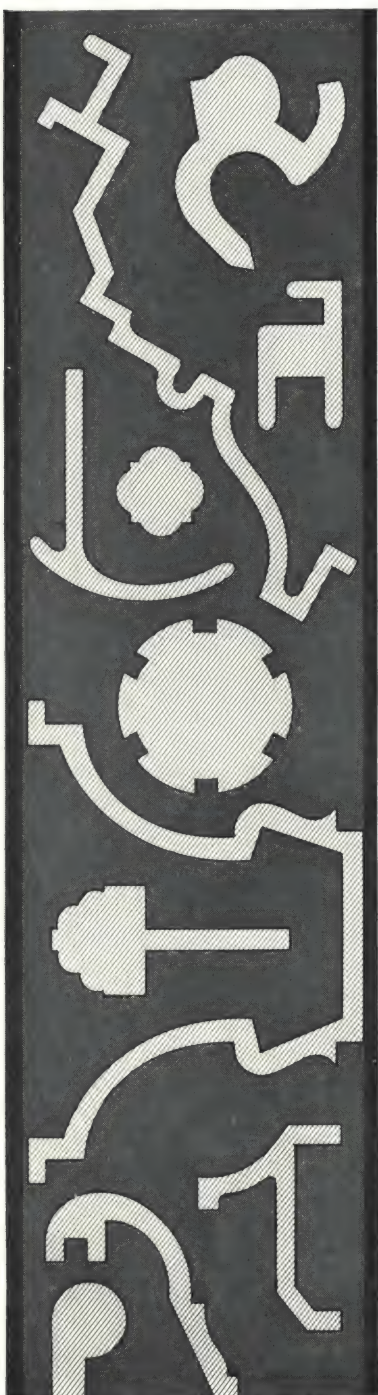
For Revere Sheet Copper, Leadtex (Lead-Coated Copper), Brass Pipe, Revere Copper Water Tube Pipe, Revecon System and Herculoy, see File Index.

BRONZES FOR ARCHITECTURAL USE

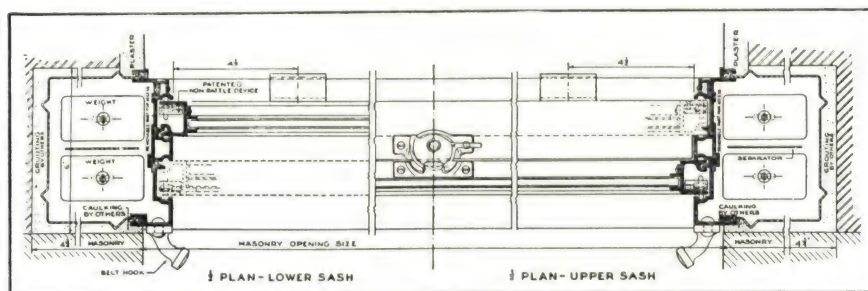
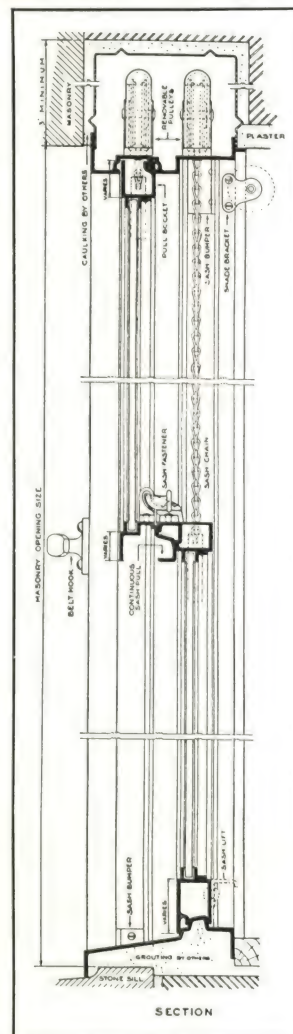
Revere panel sheets are characterized by their flatness, fine finish and uniform color. They are offered in Revere 60 Bronze, Revere 85 Bronze and Revere 90 Bronze.

Revere 60 Bronze Sheets

Revere Copper and Brass Incorporated has more than a century of experience in the production of sheet metals. Revere 60 Bronze Sheets enjoy the highest reputation, and have no superior and are preferred by fabricators because of their flatness, fine finish, uniformity of surface and color as well as the ease with which they are formed. Each step of their manufacture is closely checked and controlled by men of long experience in their production.



A Few Representative Reverse Extruded Architectural Shapes in Cross Section
Illustrations are not to scale



Details of Double Hung Window, Illustrating Application of Revere Extruded Bronze Shapes
(Courtesy GENERAL BRONZE CORPORATION)

Another advantage of Revere 60 Bronze Sheets is the close color match obtained when they are used in connection with Revere Extruded Architectural Bronze Shapes.

Ample stocks of these sheets are carried in a large range of sizes and thicknesses for prompt shipment. In addition, Revere has facilities for producing sheets of extreme width and length, depending on the thickness required.

Revere 85 Bronze and Revere 90 Bronze Sheets

These sheets are recommended for use with drawn shapes and tubular sections of the same alloy as the sheets, color match being thus assured.

Revere Extruded Architectural Bronze Shapes

Extruded architectural shapes are particularly adapted for the construction of entrances, doorways, store fronts, grilles and windows.

These shapes are uniform and accurate in size. As compared to castings, Revere extruded shapes are stronger and lighter; also the cost of finishing them is much less and at the same time rejections are reduced to a negligible factor. The average tensile strength is in excess of 45,000 pounds to the square inch.

Revere has facilities and experience for producing these shapes in plain or intricate design in commercial sizes up to and including six inches overall dimension and in lengths up to twenty feet.

Great care is exercised in the straightening of Revere shapes which is a time-saver in fabricating.

Revere Extruded Architectural Bronze Shapes produce a good color match when used with Revere 60 Bronze Panel Sheets.

Drawn Shapes

Where light weight mouldings and shapes are required for use in interior trim, show cases, store fronts and other places, Revere drawn shapes are recommended.

Rods

Revere Rods for architectural purposes are furnished in the same mixtures as sheet metals and extruded shapes.

Tubes

Revere 85 Bronze is made in round, square, rectangular and special tube forms for architectural purposes such as stiles, railings, and balustrades.

Samples

Samples of the various architectural metals described above will be gladly sent upon request.

Cooperation

Any of the Revere mills or branch offices listed on the preceding page are at the service of architects at all times. As a further service to those engaged in the design and fabrication of architectural metals an Architectural Bronze Department is maintained which offers full cooperation in furnishing estimates covering the cost of Extruded Shapes and in determining the suitability of these shapes for various purposes.

NICKEL SILVER SHEETS AND EXTRUDED SHAPES

Where a white metal with unusually fine surface and finish is desired, Revere Nickel Silver serves a definite architectural purpose.

This material is furnished in both sheet and shape form, making possible an absolute match in color and finish.

Nickel Silver Extruded Architectural Shapes can be supplied up to six inches wide and not less than one-eighth inch in thickness.

A total of 125,000 lbs. of Revere Nickel Silver (13%)

extruded shapes and panel sheets were used in the New Home Office Building of the Metropolitan Life Insurance Co., New York City.

This was used in the form of ground floor windows, screens, grilles, counters, mouldings and some of the doors and escalators. In addition 34,000 lbs. of Revere Copper and Leadtex and 250,000 lbs. of Revere Architectural Bronze Extruded Shapes were used in this building.



Bronze Grille Doors, Rare Book Room, New York Academy of Medicine, New York, N. Y.

YORK & SAWYER, Architects, New York, N. Y.

Grille doors fabricated from Revere Architectural Bronze Extruded Shapes and wire by Suburban Bronze Works, Inc., Richmond Hill, N. Y.



Metropolitan Life Insurance Co., New Home Office Building, New York, N. Y.

D. EVERETT WAID and HARVEY WILEY CORBETT, Architects
Double window fabricated from Revere Nickel Silver (13%) Extruded Shapes by General Bronze Corporation, Long Island City, N. Y.
125,000 lbs. of Revere Nickel Silver (13%) and 250,000 lbs. of Revere Architectural Bronze were used in this building.



INTERIOR DOORS

Metropolitan Life Insurance Co., New Home Office Building, New York, N. Y.

D. EVERETT WAID and HARVEY WILEY CORBETT, Architects

Doors fabricated from Revere Nickel Silver (13%) Sheets and Extruded Shapes by General Bronze Corporation, Long Island City, N. Y.

MEMORANDA

REVERE COPPER AND BRASS INCORPORATED

EXECUTIVE OFFICES AND GENERAL SALES DEPARTMENT

230 Park Avenue, NEW YORK, N. Y.

DIVISION OFFICES AND MILLS

Baltimore Division, Baltimore, Md.
Baltimore Tube Co. Division, Baltimore, Md.

Dallas Division, Chicago, Ill.
Taunton-New Bedford Division, New Bedford, Mass.

Michigan Division, Detroit, Mich.
Rome Division, Rome, N. Y.

DISTRICT SALES OFFICES

Atlanta, Georgia, 911-912 Rhodes-Haverty Bldg.
Boston, Mass.,
United Shoe Machinery Bldg., 138-164 Federal St.
Cincinnati, Ohio, 2616 Carew Tower
Cleveland, Ohio, 1127 Midland Bldg.
Dallas, Texas, 804 Tower Petroleum Bldg.

Grand Rapids, Mich.,
922-923 Grand Rapids National Bank Bldg.
Los Angeles, Calif., 124 W. Fourth St.
Milwaukee, Wis., 626 E. Wisconsin Ave.
Minneapolis, Minn., 724 Metropolitan Bank Bldg.
New Orleans, La., 437 Decatur St.
New York, N. Y., 75 East 45th St.

Philadelphia Pa., 17th & Sansom Sts.
Pittsburgh, Pa., 727 Gulf Bldg.
Providence, R. I., 1215 Industrial Trust Bldg.
St. Louis, Mo., 1010 Pine St.
San Francisco, Calif., 562 Russ Bldg.
Seattle, Wash., 317-318 Pioneer Bldg.

PRODUCTS

Revecon System—for the application of decorative materials

For Revere Sheet Copper and Leadtex (lead-coated copper), Revere Brass Pipe, Revere Red-Brass Pipe, Revere Copper Pipe (Standard Pipe Size), Revere Copper Water Tube, Architectural Metals, Extruded and Drawn Shapes, Tubes, and Herculoy, see File Index.

THE REVECON SYSTEM

U. S. Patents No. 1,973,795

2,005,994 — 2,012,070

Other Patents Pending

For the Application of Decorative Metals, Structural Glass, Tile, Plastics, Asbestos-Board or Other Flat Sheet Materials, used either Alone or in Combination with Metal, with or without Insulation

General Information

The Revecon System is a completely engineered method, using especially designed extruded structural sections of bronze or aluminum alloys to apply any rigid flat sheet materials or formed-edge metal panels, alone or in combination, to exterior or interior wall surfaces in any suitable type of construction.

Materials

In the past, basic sheet materials have been used principally for decorative purposes, but, when applied with Revecon Structural Sections, they act in a structural as well as decorative capacity, and are interchangeable.

Modern architecture, incorporating flat sheet materials has necessitated the development of new elements with which these new material forms may be constructed.

Decorative materials, particularly metal, possess inherent corrosion-free, permanent characteristics. With the Revecon system, practically any sheet material may be used, as for example: Plain copper, lead-coated copper, chromium plated copper, porcelain enameled copper, bronze, aluminum, stainless steel, porcelain enameled iron or steel; also glass, resin, or plastic in sheet forms. Furthermore, porcelain enameled metals or other synthetic materials and glass have a practically unlimited color range, while lead-coated copper, as well as porcelain enameled metals, have considerable latitude in texture.

The general acceptance of such materials in this new form is established, but their more general use has been partially restricted through lack of sufficient knowledge as to their application. The Revecon System can be looked upon as the key to coordinate the use of these materials formerly offered the building industry as

isolated products, the application of which has heretofore been stressed by individual manufacturers, but which may now be used in unlimited variations or combinations of design, color and product.

Application of Horizontal Holding Sections

Application by means of the Revecon System can be made over new or old surfaces, or superstructure of any material, including structural shapes. The sections, usually applied horizontally of semi-circular shape, are secured to the face of the structural points, or surface to be covered, with bolts, drive screws, or plugged into wall shields as the case may justify.

Vertical Sections

Vertical sections, as shown on following pages, have each end notched by means of hacksaw cuts, which cuts or notches fit into the track at the top and bottom of the horizontal holding sections.

They ride horizontally and can be moved along the track to any point where a vertical joint is desired.

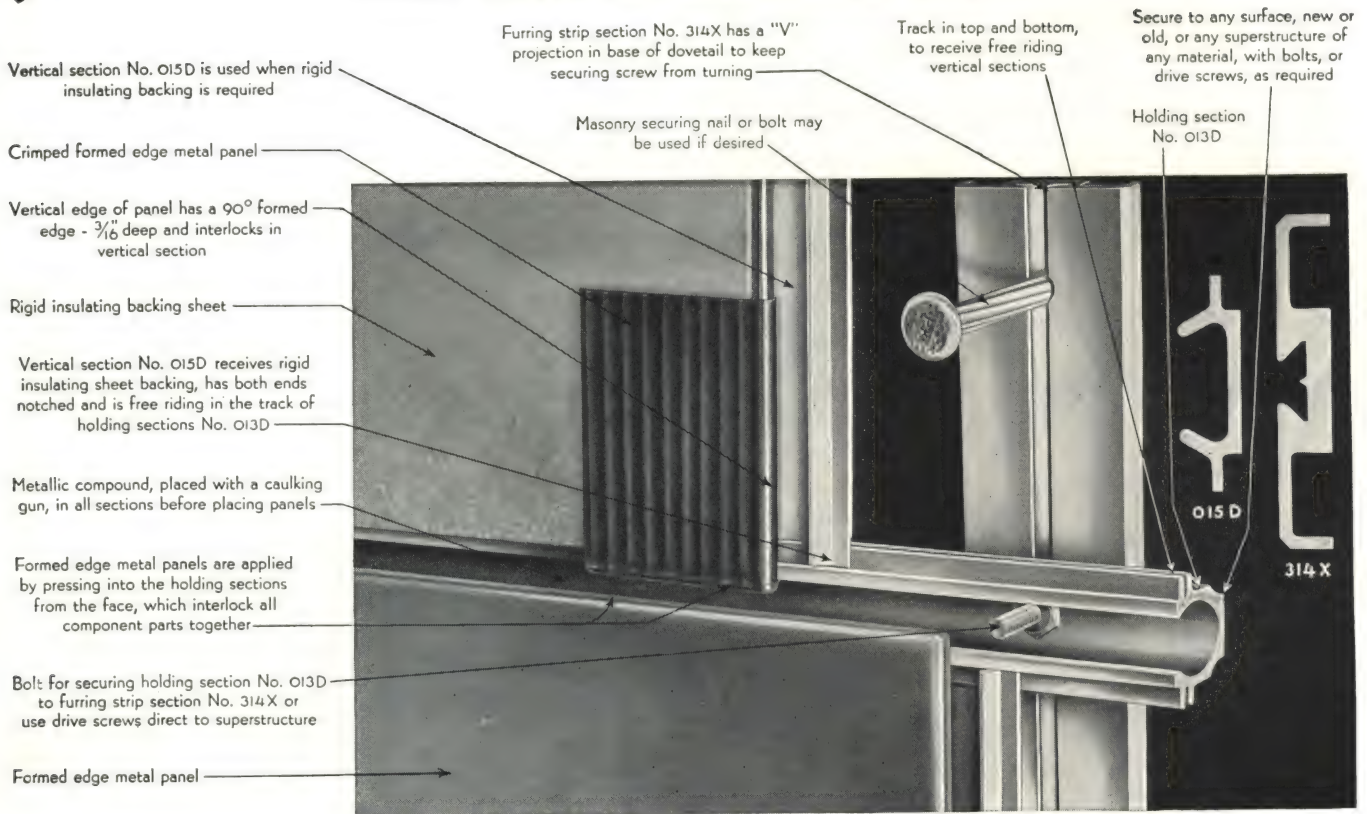
The vertical joint sections act as spacers for accurately locating the horizontal holding sections, and also as a backing for the vertical joint itself, which is of a dovetail shape, to retain the metallic compound used as the joint filler.

The horizontal and vertical sections, after erection, form a strong, light, interlocking skeleton framework, adjustable within certain limits as to panel or material sheet size.

THE REVECON SYSTEM—Details of Component Parts

The Revecon System incorporates two methods of application, briefly described on the two following pages.

REVERE COPPER AND BRASS INCORPORATED



APPLICATION OF FORMED-EDGE METAL PANELS USING RIGID SHEET BACKING

The application is developed by the use of metal panels of any selected material or combination of materials which have previously had the two parallel long edges broken to a profile to fit the internal contour of the horizontal holding sections. These formed-edge metal panels are applied from the outside by pressing them into the holding sections which have been filled with metallic compound. They are securely held in position and form a metal wall surface.

All formed-edge metal panels are utilized in tension instead of compression. The economy of applying light gauge panels in tension, with inexpensive rigid sheet backing, if desired, interlocking

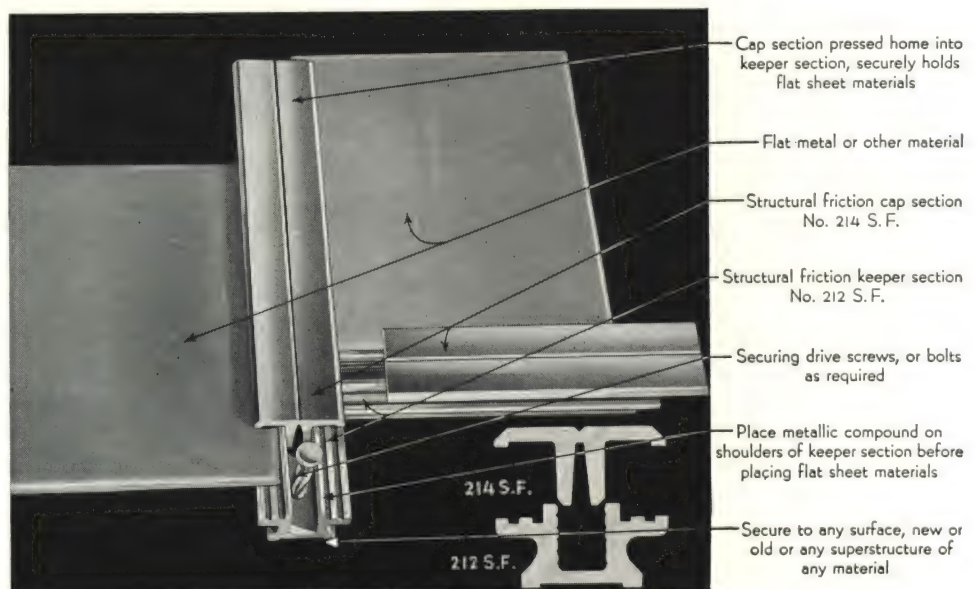
with the sections, without any plastic bond, is one of the valuable and unique features of the Revecon System, in addition to which the System has the advantages of rigidity, air tight construction, flexibility of design, and permits full expansion and contraction in each individual panel.

The metallic compound which is used to fill all joints is applied with a caulking gun. As it embeds all panel edges, remains plastic and adheres securely to the metal under all conditions, it makes an attractive, waterproof joint, at the same time permitting proper expansion and contraction.

Revecon sections (illustrated in reverse) on this and following page are shown actual size.

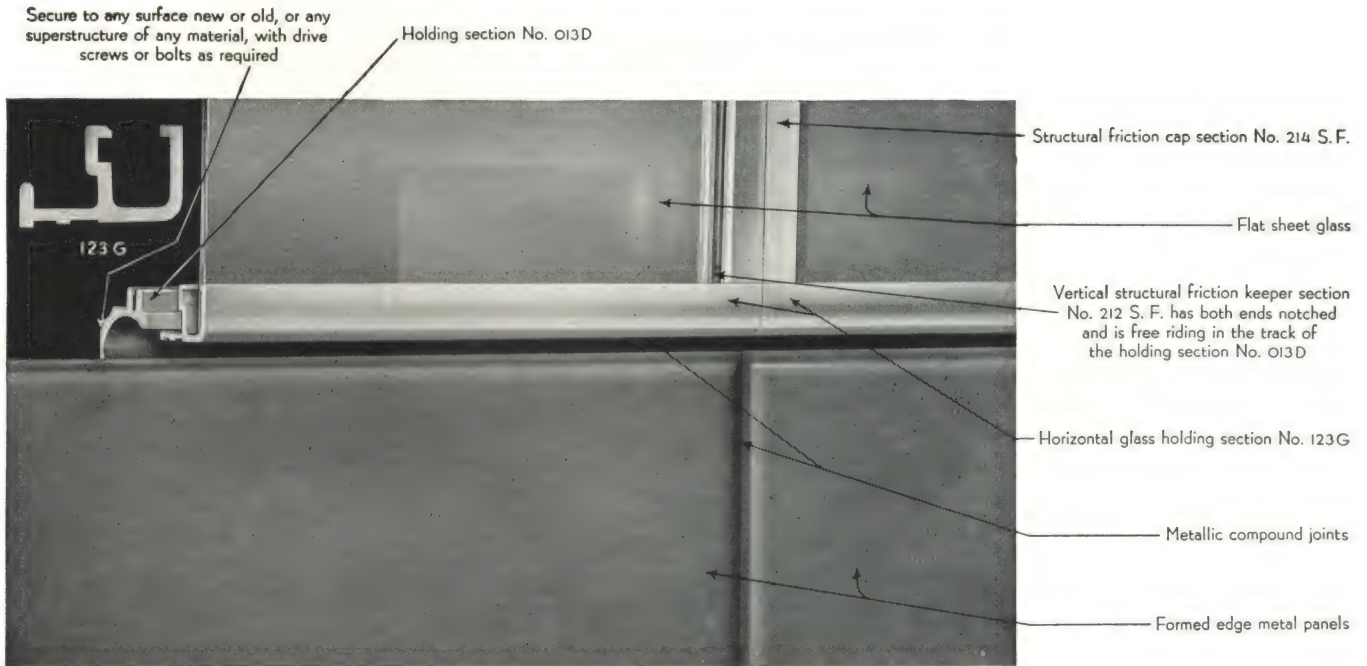
Similar to the application of formed-edge metal panels, flat sheets of any metal or material, including glass or a combination of materials, may be used to cover any surface, new or old of any superstructure or material, including structural shapes. The Revecon extruded structural sections used in this connection are of special design and depend fundamentally on a friction principle, forming a framework to receive the flat sheet materials.

The flat sheets are placed against the shoulders of the Revecon structural friction keeper section, metallic compound is applied to the shoulders of the section, and the sections are mounted horizontally and vertically over the surface or superstructure to be covered. Revecon structural friction cap section is then placed over all joints, pressed home, and engages the keeper section with a secure friction grip, forming an attractive metal batten cap joint, permanent and watertight, only $\frac{7}{8}$ " wide.



APPLICATION OF FLAT SHEET MATERIALS

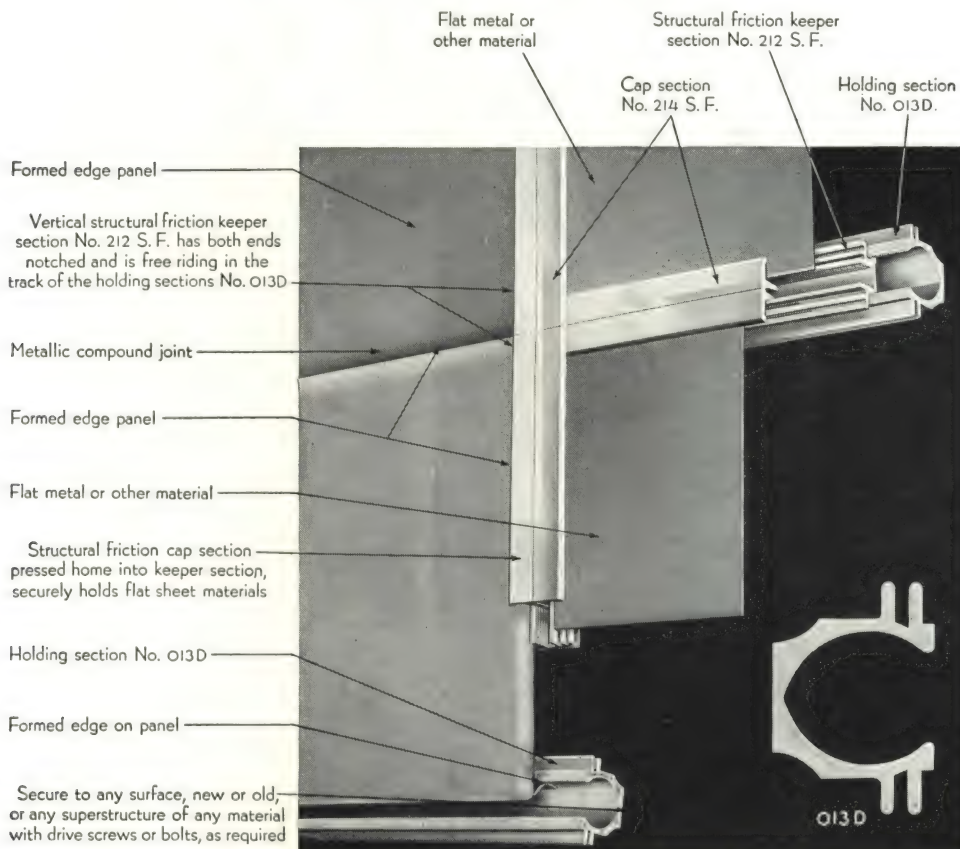
REVEER COPPER AND BRASS INCORPORATED



APPLICATION OF FLAT SHEET GLASS USED WITH FORMED EDGE METAL PANELS

By using a combination of Revecon structural sections, flat sheet glass may be interchanged with formed-edge metal panels, eliminating the conventional sash and frame, and enabling the architect to design "units of light" or bands of glass, either horizontally or vertically.

Vertical sections for use with glass have their ends notched in the same manner as previously described; may be placed where desired; are pointed as in the case of the formed-edge panel, and the glass panels themselves are embedded in metallic compound.



In recent tests, direct pulls of from 1000 to 1800 lbs. per lineal foot were required to disengage typical Revecon sections after assembly.

The adaptability and flexibility of the entire Revecon System is particularly well illustrated in detail at left, which shows how formed-edge metal panels and flat sheet materials may be used in combination by slipping the structural friction keeper section inside of a holding section.

APPLICATION OF A COMBINATION OF FORMED EDGE METAL PANELS AND FLAT SHEET MATERIALS

Erection

Any wall surface, masonry superstructure or skeleton frame using structural shapes in the standard way may be used as backing for the Revecon sections.

Supporting studs or structural points are erected in the usual way, properly spaced, subject to wind pressure, in accordance with local building codes, but, in general, 3'0" to 10'0" spacing may be designed if care is exercised in choice of selected sections and center to center spacing of horizontal holding members is observed.

Revecon structural sections are then attached to the face of the vertical structural points, or surface to be covered, with bolts, drive screws, or plugged into wall shields as the case may justify.

The sections are erected, panels applied, and glass sections inserted by local contractor using the building craft that has jurisdiction over this type of erection in his locality.

The Revecon System lends itself readily to rapid field erection, eliminating costly delays between trades, making it possible to use continuous straight line methods of construction.

Fabrication

The formed-edge metal panels can be fabricated by any sheet metal shop and, if porcelain enamel is required, may also be fabricated, as well as enameled, by any enameling concern.

The long parallel edges of each decorative metal panel are formed over a simple break die to the profile necessary to engage the Revecon holding section. This die may be used in any sheet metal power press.

If flat sheet decorative metal panels are used, a shear is the only equipment necessary to fabricate.

Renovizing

The simplicity and ease of erection of the Revecon System is such that the holding sections may be attached to any existing masonry or other surface, making it well adapted to the covering of old buildings.

A new front can be put on over an old building and have a total additional thickness of one inch, if formed-edge decorative metal panels are used, and $\frac{3}{8}$ " additional thickness where flat sheet materials only are used. All work can be done from the exterior without damage to the interior wall surfaces and panels may be individually removed or replaced, if necessary, without damaging any surrounding wall panel.

The modernizing of existing buildings offers one of the largest fields for the application of decorative metals and other flat sheet materials.

Expansion and Contraction

The use of metals for exterior work of any kind has always been satisfactory in direct ratio to the allowance made for its expansion and contraction.

Elimination of this difficulty was one of the underlying objectives of Revecon design. Expansion and contraction take place entirely within each panel area.

Metallic Compound

The metallic compound in which the panel edges are embedded remains plastic under all conditions, while the sections permanently secure the panels regardless of changes in temperature.

Insulation

The Revecon system does not limit the designer in his selection of type of insulation. Any thickness used in current practice may be employed. Rigid board, spun glass, rock or mineral wool, or any other type of insulating fill is readily accommodated.

It is also possible where insulation is not required to provide interior finishes by using one of the many available metals or other flat materials that have finished surfaces on both sides.

Salvage

The use of Revecon System allows practically a total salvage of all component materials for dismantling and re-erection, except the metallic compound.

Architectural Cooperation

This company does not undertake architectural design for any specific project, preferring to refer any interested inquirer to his own architect for such services.

Assistance and Information

Revere Copper and Brass Incorporated is glad at all times to provide additional information to those engaged in planning, designing or erecting any type of construction in which the use of any Revere building material or product may be contemplated or specified.

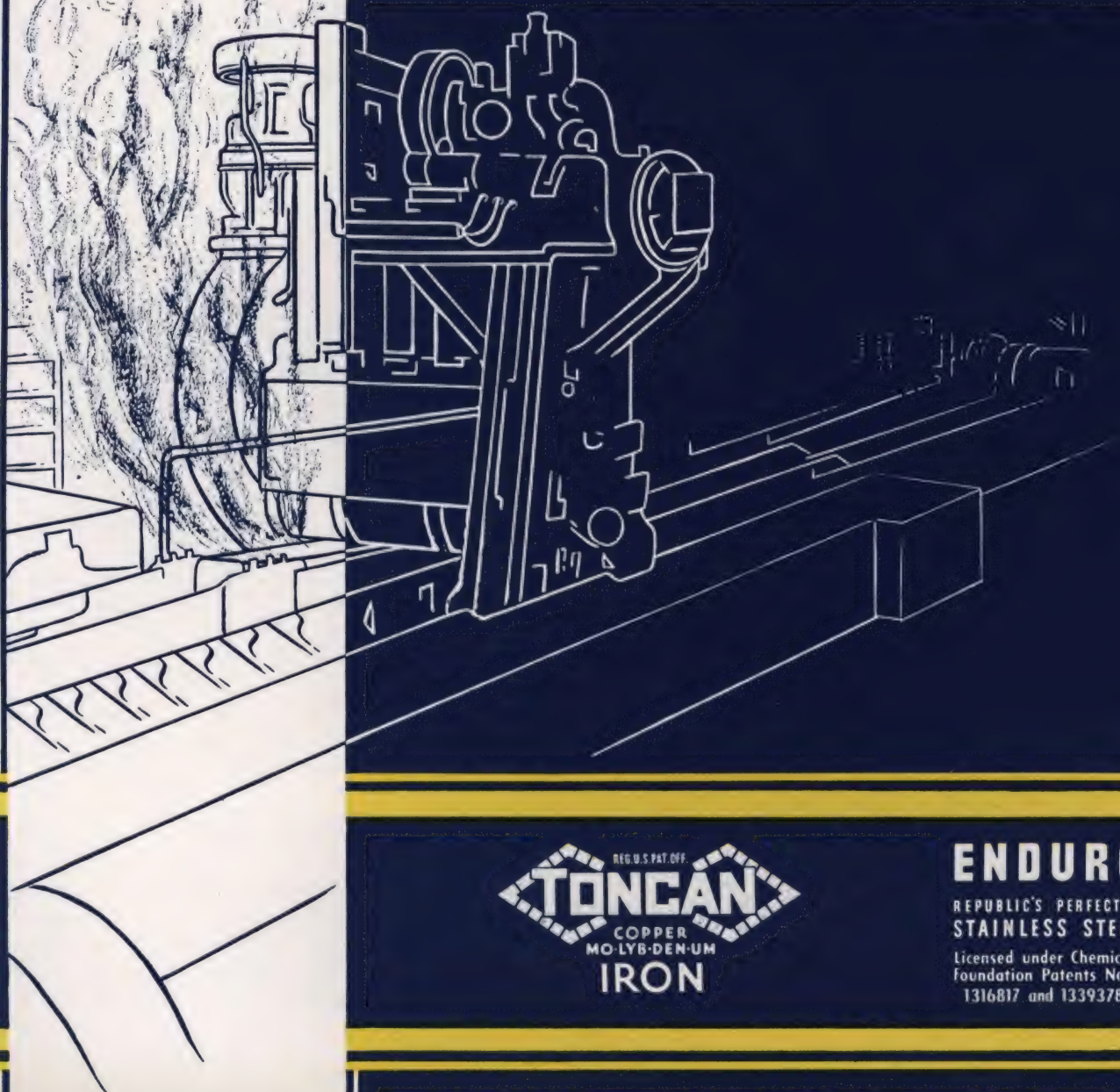
Literature

We will gladly send on request a handbook describing the Revecon System. This contains specifications and construction details. It is arranged so the architect can detail his design incorporating any of the many flat sheet materials he may elect, such as metal, glass, tile, asbestos-board, plastics, etc.



REPUBLIC

STEEL CORPORATION



ENDURO

REPUBLIC'S PERFECTED
STAINLESS STEEL

Licensed under Chemical
Foundation Patents Nos.
1316817 and 1339378.

FOREWORD

MOST architects who have contemplated using stainless steel in the past have been hampered by lack of accurate basic information which would enable them to select and specify intelligently the particular type of stainless best suited to given requirements. In compiling the information contained herein it has been the purpose of REPUBLIC STEEL CORPORATION to endeavor to remove some of the mystery and confusion which have heretofore surrounded the general subject of stainless steel for architectural uses and to present in non-technical form—so far as possible—such data as will permit the architect to differentiate between the various types of stainless steel and better appreciate the unusual characteristics and wide range of possible applications of this newest of metals.

ARCHITECTURAL SERVICE

In the discussions on the pages which follow emphasis has been laid on the necessity for selecting the proper type of steel to meet the particular conditions of the use contemplated. To assist the architect in specifying that type which will most satisfactorily meet his requirements, we offer the services of the Metallurgical Department of Alloy Steel Division, REPUBLIC STEEL CORPORATION, with its completely equipped modern laboratories where authorities are continually studying every factor connected with the production and application of stainless steels and where the best of laboratory equipment and specialized advice is freely available.

In connection with the uses of stainless steels shown and described herein it should be borne in mind that REPUBLIC STEEL CORPORATION does not sell or furnish the products direct. The Corporation produces only the unfinished material which is fabricated by others. Any of the district sales offices listed on the back cover will be glad to cooperate with the architect and suggest fabricators who are experienced and qualified to handle the work. They will also advise the architect on questions of specifying, detailing and installation.

For such advice or assistance please call the Sales Office or the distributor nearest you or write to the Alloy Steel Division of the Corporation at Massillon, Ohio. Samples (3x5 in.) of various finishes will be furnished any architect on request.

TONCAN IRON

On pages 17 to 23 of this catalog will be found a brief description of Toncan Iron and Toncan Iron Products which are of particular interest to the architect, engineer and contractor. Included also are data on Toncan Iron Enameling Sheets which are finding a wide variety of architectural applications.

Data on Republic Steel Pipe and Toncan Iron Pipe will be found elsewhere in this file.

ENDURO STAINLESS STEEL SHAPES AND SIZES

Enduro Stainless Steel is furnished in the forms listed below. In addition to these Enduro may be cast and the architect will find many uses for which cast stainless steels are especially appropriate. All shapes are made by fabrication and either formed, rolled or drawn. In the present state of the art Enduro does not lend itself readily to the extruding operation. For detailed information consult any Enduro Stainless Steel Distributor or any of the Republic District Sales Offices listed on the back cover.

Rounds, hot rolled, cold drawn, centerless ground and polished.

Squares, hot rolled and cold drawn.

Hexagons, hot rolled and cold drawn.

Flats, hot rolled and cold drawn.

Sheets, standard gauges and sizes, annealed and

pickled, polished one side and polished both sides.

Plates in practically any size and thickness obtainable in plain steel; large size one-piece flanged and dished heads.

Strip, hot rolled, and cold rolled, and polished.

Forging blanks, any reasonable weight or size.

Shapes, angles, channels, I-beams, etc. Sizes on application.

Tubing, seamless, Republic electric resistance welded. Pickled or polished.

Welding Rods, $\frac{1}{8}$ in., $\frac{3}{16}$ in., $\frac{1}{4}$ in. diameter. Coated and uncoated carried in stock for electric and acetylene welding.

Castings can be furnished of Enduro 18-8 analysis by special arrangement.

Bolts and nuts, rivets, screws, nails, tacks, spikes, wire and many other items of Enduro Stainless Steel can be obtained from various sources. Names of manufacturers will be gladly furnished.

● ENDURO STAINLESS STEEL

ENDURO STAINLESS STEEL

"Enduro" is the trade name identifying the group of stainless steels perfected by Republic Steel Corporation at its Alloy Steel Division, Massillon, Ohio. These alloys are silvery-white in appearance and cannot chip, crack or wear thin as they are the same metal all the way through. They do not tarnish, corrode or become dull when properly applied. They can be worked and fabricated for any purpose. They can be given a number of different finishes or combinations, or may be etched and enameled to produce unusually beautiful effects. They may be combined with colored porcelain enamel (or with other metals) to produce a wide variety of pleasing effects. In brief, the unusual properties of Enduro Stainless Steels indicate their use not only for the finest of decorative effects but also for every application subject to possible corrosion.

Probably few persons not directly connected with the industry appreciate the wide range of uses now being made of stainless steel. A list of these would be a roll call of almost every manufacturing process in the United States. From cooking utensils to automobile parts, from golf clubs to bank vaults, stainless steel is finding new applications every day. In the engineering, chemical, power and oil refining fields, the corrosion- and abrasion-resistance and strength of stainless steel at high temperatures are essential.

Although chromium, the element, was discovered in 1789 and the acid-resisting properties of chromium-iron alloy appreciated as early as 1821, it was not until within the past twenty years that commercial application has been made of such alloys. Since 1913 hundreds of patents have been granted both in this country and abroad for various stainless alloys.

Naturally this flood of patents has led to considerable confusion, particularly among laymen, as it seems that nearly every steel manufacturer has entered the stainless field making this or that analysis. Rash claims have been made regarding the performance of these alloys and far too often the application has been made to suit the alloy on hand rather than applying a specific alloy which would give the desired results.

While different trade designations are still used by various manufacturers, standard type numbers have been assigned to all stainless steel analyses. This has been done under the supervision of the American Iron and Steel Institute.

Types of Stainless Steels

Technically there is a distinction between stainless iron and stainless steel, although latter term is popularly, if erroneously, used to designate all stainless alloys.

Stainless Iron generally is an alloy of iron and chromium, or of iron, chromium and nickel, with a *very low carbon* content. The stainless properties of the alloy are due to the ability of chromium to form with iron a solid solution which is resistant to the various corrosive media. It is essential that sufficient chromium be present in solid solution to ensure stainless properties. The chromium content of Enduro Stainless Irons has been adjusted accordingly.

Stainless irons, or stainless steels as they are popularly known, as a class do not respond to hardening by heat treatment. Neither do they require special heat treatment other than that received at the mill to develop stainless properties. Stainless steel lends itself to deep drawing and other forming operations.

To meet the demand for corrosion-resisting alloys suitable for a wide variety of specific purposes, Enduro Stainless Steel has been developed in a number of types. In this development, all factors affecting corrosion-resistance have been considered and their relative importance established. The result is a series of alloys possessing maximum corrosion-resistance and physical properties, consistent with ease of workability, for each field of application. Two of these steels were especially developed for architectural uses and are described in detail on the pages which follow.



New York District Sales Offices of Republic Steel Corporation, Chrysler Building, New York, N. Y.
Designer—Kenneth D. Rippen

Enduro used for doors, lighting fixtures and bands on walls

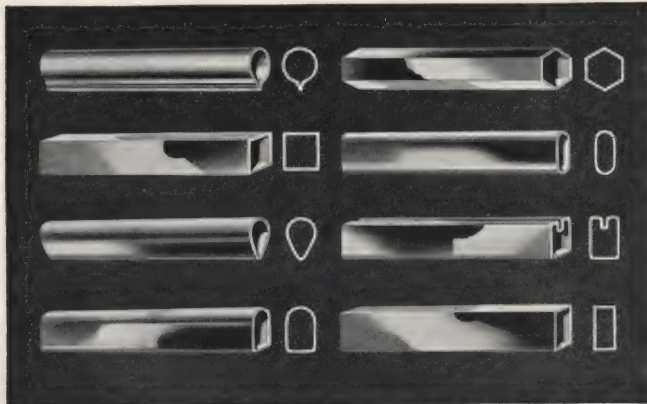
ENDURO STAINLESS STEEL FOR ARCHITECTURAL USES

To attempt to list all the hundreds of possible architectural applications of Enduro Stainless Steel would be merely to catalogue the uses for any metal in any building for there is almost no place in which the usual metals are used where Enduro will not prove highly satisfactory. Not only does the beautiful, silvery-white lustre open for the designer an entirely new field of decorative possibilities because there is no coating to wear off, but the corrosion-resisting qualities indicate its use wherever there is liable to be danger of atmospheric attack. For example, Enduro has been used for decorative effects in some of the country's finest buildings and yet its qualities make it equally suitable for such practical purposes as boiler and heater smoke pipes where it has a life many times that of ordinary pipe with the consequent economy and freedom from trouble.

Of the many different types of alloys, two are of special interest to the architect because they are particu-

ple to process of all the types and are used for applications requiring decided bends or draws or welds and for straight flat work.

It is realized that some architects may not be familiar with the many applications of Enduro now being made in the architectural field and the list below is included simply as indicative of the wide range of possibilities with this unusual metal.



Some Standard Shapes of Enduro Stainless Steel Tubing (in Addition to Standard Rounds) of Enduro Stainless Steel

Manufactured by Steel & Tubes, Inc., Cleveland, Ohio
Subsidiary of Republic Steel Corporation

larly suitable for architectural applications. These are Enduro 18-8 and Enduro AA. The former (Enduro 18-8) meets every architectural requirement and is generally used for such purposes. The latter (Enduro AA) is less expensive than Enduro 18-8 and is used to some extent for interior work. These two are the most sim-

- | | |
|---------------------------------------|-----------------------------------|
| Air Conditioning Equipment | Letters, Stamped, Formed and Cast |
| Awnings and Canopies | Lighting Fixtures |
| Balls for Flag Poles | Lintels, Window |
| Beer and Liquor Dispensing Equipment | Louvers |
| Blowers | Marine Ornamentation |
| Bolts and Nuts | Marques |
| Booths | Medallions |
| Boxes, Safe Deposit | Mirrors |
| Bulletin Board Frames | Moulding, Window |
| Cabinets | Moulding, Various |
| Cable, Wire | Mullions (Exterior and Interior) |
| Cages | Nails |
| Casements | Name Plates |
| Ceilings | Ornamental Metal Work |
| Chairs | Panels, Plain and Fluted |
| Channels | Partitions |
| Chimney Tops (to prevent down drafts) | Piers |
| Chute Covers | Pilasters |
| Chutes, Mail | Pillars |
| Clock Dials | Plaques |
| Columns | Play Ground Equipment |
| Conveyor Systems | Posts |
| Coping | Railing, Decorative |
| Cornices | Railing, Stair |
| Counter Covers | Refrigerators |
| Courses, Band | Risers, Stair |
| Crosses on Churches | Rings, Circular |
| Desks | Roofing |
| Display Cases (plain or refrigerated) | Rosettes |
| Domes | Safes |
| Door Jambs, Sashes and Moulding | Screens (Frames and Cloth) |
| Door Push Bars and Plates | Scroll Work |
| Doors, Elevator | Sheathing |
| Doors, Revolving | Shelving |
| Doors, Swinging | Shower Cabinets |
| Doors, Vault | Signs |
| Down Spouts | Sills, Window |
| Drinking Fountains | Sinks |
| Elevator Dials | Skylights |
| Entrances | Smoke Pipe for Furnace |
| Etched Panels | Soffits |
| Facades | Spandrels |
| Flashing | Spires |
| Floor Plates and Tread | Store Fronts |
| Flues | Structural Members |
| Frames, Advertisement | Tablets, Memorial |
| Gates | Theatre Equipment |
| Grilles, Radiator and Decorative | Towers |
| Gutters | Urns, Decorative |
| Hardware | Vaults |
| Hinges | Ventilators |
| Hoods, Range and Laboratory | Ventilating Ducts |
| Incinerators | Vestibules |
| Kick Plates, Door | Window Frames |
| Laboratory Equipment | Wire Cables |

ENDURO 18-8

Enduro 18-8 contains approximately 18 per cent of chromium and 8 per cent of nickel with carbon from .08-.20 per cent. The addition of nickel—a metal possessing in itself considerable corrosion-resistance—to the stainless analysis greatly increases the corrosion-resistance of the alloy, extending this resistance to a number of materials which attack stainless chromium iron, to the point of complete immunity from attack. The addition of nickel also increases resistance to scaling at high temperatures, reduces grain growth, and at

the same time lessens embrittlement after long service at high temperatures. Metallurgically, the effect of the nickel is to produce an alloy of the stable austenitic type; characterized by extraordinary toughness and ductility, no capacity for hardening under heat treatment, high resistance to impact, and the property of being non-magnetic. To take full advantage of the addition of nickel, certain processing is necessary and this forms an important part of the Enduro production method.

● ENDURO STAINLESS STEEL

Typical Analysis and Average Physical Properties of Enduro 18-8

Analysis

Carbon	over .08-.20
Chromium	17.0-19.0%
Nickel	7.0-9.0%
Silicon	under .75%
Manganese	under .60%
Sulphur	under .030%
Phosphorus	under .030%
Weight—virtually the same as steel—0.2833 lb. per cubic inch.	
Thermal Conductivity expressed in calories per centimeter cubed: .035	
Resistance to High Temperature Scaling	

Continuous Service 1600° F.

Intermittent Service 1450° F.

Co-efficient of Linear Expansion—Temperature	x10 ⁻⁶
0- 100° C. =	16.0
0- 300° C. =	17.0
0- 600° C. =	18.0
0-1000° C. =	20.0

Melting Point (approximately 2560° F.)

Cold working increases the ultimate strength and yield points over those shown above but reduces ductility.

Average Physical Properties Annealed (24 Gauge Sheet)

Ultimate Strength.....	85,000 lbs. per sq. in.
Yield Point.....	35,000 lbs. per sq. in.
Elongation in 2 in.....	55.0%
Elongation in 4 in.....	50.0%
Elongation in 8 in.....	45.0%
Rockwell B.....	80
Olsen Cup Test.....	.450-.500

(Lighter gauges will have lower cup values)

Average Physical Properties (Annealed Round Bar Stock Up To 2 in. Rd.)

Ultimate Strength.....	85,000 lbs. per sq. in.
Yield Point.....	35,000 lbs. per sq. in.
Elongation in 2 in.....	55.0%
Red. Area.....	65.0%
Rockwell B.....	80
Brinell.....	156

(Larger sizes will have lower strength values)

It is not uncommon to find 250,000 lbs. tensile strength, 2% elongation and 40-45 Rockwell "C" hardness in cold drawn 18-8 wire.

Cold rolled strip having 150,000 lbs. ultimate strength, with 9 to 15% elongation in 2 in., can be obtained. It will stand a 180° bend across the grain of the metal and 120° to 180° with the grain.

Fabricating Enduro 18-8

The proper fabrication of any metal is a most important part of a successful installation and for this reason the data below are presented for the information of the architect who may be unfamiliar with the best methods of working and forming Enduro 18-8. Enduro 18-8 is one of the finer metals and should be handled similarly to other high grade materials rather than attempt to fabricate by employing methods generally used on common iron or steel products.

Deep Drawing, Punching and Shearing

Enduro 18-8 is well suited for performing these operations. Its extremely high elongation and low yield point are indicative of what may be expected of this alloy as compared to regular deep drawing steel. It should, however, be pointed out that Enduro 18-8 work hardens very rapidly and to a much higher degree than does regular drawing steel. For this reason it is necessary to perform as much work as possible in a single drawing operation and to reanneal between operations. The blanks used should be of sufficient size not to require excessive ironing out in the dies to secure cup depth, as the work hardening characteristics of the alloy may cause high breakage loss as well as excessive wear on the dies. The use of a special lubricant of suitable consistency and body is quite important. A number of suitable drawing compounds is available from chemical supply concerns. Operation of the press should be as slow as possible. Die clearance should be about twice that used for steel or brass.

The work hardening characteristics and high tensile strength of Enduro 18-8 make it necessary to use more power in performing drawing operations than is required in forming and drawing steel of a similar gauge. A very close adjustment of shear blades and of clearance between punches and dies is recommended for punching and shearing operations. The power required will be greater for the reason previously given and it will be necessary to shear through the entire thickness of metal rather than permit it to snap off after a portion of the cross-section has been cut through, as occurs in punching most materials.

Riveting

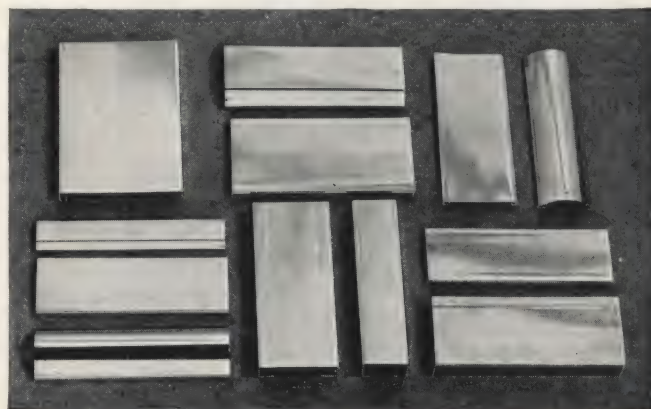
Enduro 18-8 is ideal material for rivets. As it does not harden on rapid cooling, nor develop coarse crystalline structure on heating, the more accurate temperature control required for straight chromium iron rivets is not necessary. Rivets when driven hot should be heated within a temperature range of 2100-2200° F. Smaller size rivets may be driven cold, as they remain tough and thoroughly dependable. Hot driving is recommended for rivets over $\frac{1}{8}$ in. in diameter.

Welding

Enduro 18-8 may be welded by either the acetylene torch or electric arc, using specially prepared Enduro 18-8 welding rods or electrodes. It may also be spot and resistance welded, but cannot be forge or hammer welded. Seam welding of light gauge sheets is readily accomplished. Having no capacity for harden-

ing, welds remain tough and ductile and do not develop the coarse, "weak" crystalline structure characteristic of the straight chromium iron alloys.

For acetylene welding, uncoated welding rods should be used. With plates and other heavy materials, chamfer the edges to be welded and place these a small distance apart. Build up a bead between these edges, keeping the flame pointed in the direction



Some Standard Shapes of Enduro Stainless Steel Moldings

of welding so as to preheat the work. Use a slightly reducing flame, and see that it is no larger than necessary for the work to be done. For electric arc welding, specially coated rods or electrodes must be used. Reverse polarity (electrode must be positive and work the negative pole) and regulate the machine to give the same or lower voltage than would be used with plain steel rods, and with sufficient current to give good fusion. Definite instructions cannot be given as much will depend upon the character of the work and the type of machine used. (See Enduro Welding Booklet for further information.)

While welds made with Enduro 18-8 are naturally tough and ductile, the annealing treatment previously mentioned is strongly recommended if the welded material is to withstand severe corrosive attack. This treatment will tend to remove the difference in structure between the weld and the adjacent metal, which is the primary cause of local attack in welded structures. Where acid corrosion may be encountered and annealing of the weld is not possible, Enduro 18-8-S should be used.

Soldering

Enduro 18-8 may be soldered without difficulty, producing firm, strong joints. For pickled finish sheets, the ordinary muriatic acid, cut with zinc, may be used. However, better results will be obtained with special commercial fluxes, used with ordinary solder, and by pursuing the same procedure as with copper, tin, terne, etc. For polished sheets, the surfaces to be joined should be roughened with a coarse emery wheel before tinning.

The metal comprising the joints should be properly tinned before assembly. The half tin, half lead type of solder may be used but solder with higher tin content such as 75% tin—25% lead is recommended because it does not discolor as rapidly under atmospheric exposure. On account of the low thermal conductivity, use a large soldering iron which will have sufficient heat capacity to heat the metal thoroughly. Immediately after soldering, *all traces of acid must be thoroughly removed* by washing with soap and water to which has been added some washing soda, as the acid attacks the metal readily and will stain if not removed. Soldering should not be depended upon for strength but simply to seal the joint. Riveting, lock seaming or spot welding should be used for strength. Rivets should be tinned to insure adhesion of the solder before driving which, of course, is done cold.

Brazing and Silver Soldering

We recommend welding rather than brazing whenever possible due to the excellent welding properties of 18-8 and to the possibility of intercrystalline penetration of the brazing alloy. This lowers corrosion-resistance and causes embrittlement of the joint under wet corrosive conditions by favoring electrolytic action. Brazing must be carefully done to prevent the penetration of brazing alloy into the grain boundaries of the metal.

For brazing and silver soldering proceed in the usual manner, observing the precaution of having the metal just sufficiently hot for good adhesion. Special stainless steel brazing flux should be used.

A satisfactory flux for brazing or silver soldering may be made by mixing one part of borax with two parts of sodium or potassium bi-fluoride. Use either dry or in a water or alcohol paste, applying a small quantity to the parts to be joined before heating. Then proceed with ordinary brazing material or silver solders.

Machining, Sawing and Drilling

Being an austenitic alloy, Enduro 18-8 is tough and somewhat difficult to machine. In order to overcome the machining difficulties heretofore confronted, Republic has produced a free machining 18-8 alloy which is termed ENDURO 18-8-FM. This free machining alloy, as its name suggests, simplifies to a great extent turning, milling, boring and drilling operations. Its corrosion-resisting properties are comparable to those of the regular ENDURO 18-8. Best results are obtained with slow cutting speeds and moderately heavy cuts. Tools must be ground and kept sharp, and with a steep side and lip rake (at least 15 degrees). In threading, arrange so that four or five teeth engage, instead of the usual two or three.

Drilling should be done with a high speed steel drill. Best results are obtained when the drill is ground somewhat flatter than is customary. The drill should cut all the time, and in laying out work as small a mark as possible is advisable, as the punch will work harden the alloy and make it difficult to start the drill. The speed of the drill should be about one-half that used in the case of mild steel. When drilling deep holes or hollow boring, a compound of high sulphur base oil with the addition of turpentine will prove of value.

In sawing, a high speed steel blade should be used of the fine tooth, wavy type. When possible a circular type saw should be used.

When drilling and sawing use constant pressure. Permitting the saw or drill to ride the surface causes work hardening.

Protecting the Surface of Polished Enduro During Forming—Drawing—Moulding—Construction and Erection

Many applications of Enduro permit the use of mill polished sheets such as No. 4 finish, No. 6 Tampico finish, No. 7 finish and No. 8 mirror finish. A few of these applications are—soda fountain and bar equipment, dairy equipment, meat packing equipment, hospital and kitchen equipment, restaurant and cafeteria equipment and for structural and decorative purposes such as used on the Empire State and Chrysler Buildings, and many others.

In nearly every instance, sheets for the type of work mentioned above are polished in our Special Products Division, where great care is taken to obtain the desired finish—free from pits, scratches and other marks.



Photo, Hendrich-Blessing Studio
Amalgamated Trust & Savings Bank, Chicago, Ill.
Architects—Holabird & Root

Enduro used for sheathing on vault, fence and gate and on entrance to bank

In the ultimate use of these polished sheets there are, of course, some cases where no fabrication is done on the material, and it is used in the flat. Only careful handling is then required to preserve the lustrous finish. It will be found, however, that in most cases subsequent operations will be performed on brakes or presses. Under these conditions it is essential that precautions be taken to eliminate marks, scratches and dents. It has been found that it simplifies the problem greatly to prevent marring the sheet at the start rather than to polish out the marks that have appeared through improper protection in the dies. It is quite difficult to match by hand, on a formed object, the finish that has been put on the sheet at the mill with our polishing machines.

While we do not maintain that it is possible entirely to prevent scratching and galling on all types of work, we feel that everything possible should be done to minimize the possibility of their formation.

Preventing Injury During Fabrication—Is accomplished by proper lubrication. Several methods are being used which will be noted here, and the fabricator should use the one best adapted to his particular operations.

The first consideration should be given to the condition of the dies. They should be well polished and at the first sign of any pickup of the metal, the press or brake should be stopped and the dies stoned and polished.

One of the most effective lubricants for use on Enduro is a mixture of Lithopone and linseed oil. It should be applied generously. Lithopone is obtainable from Grasselli Chemical Co. and the New Jersey Zinc Co., in powder form, and should be mixed with linseed oil to form a liquid of fairly heavy consistency. Benzine may be used as a thinner, and sometimes paraffin oil is substituted for linseed oil, although in our opinion linseed oil is preferable. We advise the use of Lithopone when the forming is severe, and where special care is necessary.

Lithopone may be removed from the sheet after forming by the use of benzine or kerosene.

There are now available on the market, special stainless steel lubricants using Lithopone as a base.

Another method which preserves the polished finish of the metal is the application of adhesive tape to the dies. This method can be used where the work applied to the metal is not severe, such as in bends on brakes. We do not recommend its use for deep drawing. The merit of this type of protection can easily be realized, as it prevents direct contact between the polished surface of the Enduro sheet and the hardened steel of the dies.

Following this same line of thought, the use of thin paper between the polished metal and the die has worked well in several cases. Wax paper, oiled paper, and cellophane have been used

● ENDURO STAINLESS STEEL



St. Colman's Parochial School, Watervliet, N. Y.
Architects—Gander, Gander and Gander
Enduro Toilet Partitions

with marked success in the elimination of die scratches. The paper is usually used as an adjunct to the lubricant.

Protection of Polished Enduro During Building Construction—The wide use of polished Enduro for exterior decorative purposes in building construction has made necessary the

means of protecting it from what we will call "building filth," meaning plaster, cement, concrete, ashes, rust from steel work and other contaminations with which the polished sheet may come in contact during the erection of a building.

Several of the large paint concerns have developed special lacquers which will protect the sheet for a period of one year or longer from the effects of "building filth." The lacquer can be removed at the completion of the building, or it may be allowed to wear off from the effects of the weather. The lacquers we approve will not whiten through exposure to weather.

The method used on the Richman Bros. Building, recently completed in Detroit, was the pasting of Manila paper over the entire exposed surface of the formed sheet. Following the completion of the building, the paper was removed with water—and the surface of the metal found to be in perfect condition.

Passivation

The passivation treatment consists of immersing the material in a 25% by volume solution of nitric acid and water at a temperature of 120–125° F. for 15–20 minutes. The purpose of the passivation treatment is to remove any trace of iron or steel which has become abraded on the stainless steel due either to shearing or contact with dies in forming operations. The nitric acid bath will remove this film of iron without affecting the surface of the polished stainless steel.

The tank for holding the nitric acid solution can be made from wood, stainless steel, earthenware or rubber.

Bulletins

Bulletins covering in detail each of the operations and treatments which may be applied to Enduro Stainless Steels are available and will be sent gladly to any architect on request.

ENDURO AA

Enduro AA is a straight chromium alloy. It is a fairly ductile, non-hardening alloy with physical properties equal to a high grade medium carbon steel, with resistance to general corrosion and oxidation at high temperatures.

It is recommended only for interior applications as its resistance to corrosion is not equal to 18-8.

Fabrication in general is similar to 18-8 except it does not possess the same degree of ductility or welding properties, and does not work harden to any great extent.

All welded joints in straight chromium alloys (without the addition of nickel) have a tendency to embrittlement at and adjacent to the weld, due to the high temperatures required for welding, which causes excessive grain growth.

Typical Analysis and Average Physical Properties of Enduro AA

Analysis

Carbon	max. .12
Chromium	15.0–18.0
Silicon	max. .50
Manganese	max. .50
Sulphur	max. .03
Phosphorus	max. .03
Nickel	max. .25
Weight per cubic inch—virtually the same as steel. (.277 lbs. per cu. in.)	
Thermal Conductivity expressed in calories per centimeter cubed: .045	
Resistance to High Temperature Sealing—	
Continuous Service 1500° F.	
Intermittent Service 1600° F.	
Co-efficient of Linear Expansion—Temperature x10 ⁻⁶	
0–100° C. =	9.6
0–300° C. =	10.1
0–600° C. =	10.9
0–800° C. =	11.2

Melting Point—2650°–2700° F.

Average Physical Properties (Annealed Sheet)

Ultimate Strength	80,000 lbs. per sq. in.
Yield Point	50,000 lbs. per sq. in.

Elongation in 2 in.....	26.0%
Elongation in 4 in.....	22.0%
Elongation in 8 in.....	18.0%
Rockwell B	80

Average Physical Properties (Annealed Round Bar Stock)

Ultimate Strength	80,000 lbs. per sq. in.
Yield Point	50,000 lbs. per sq. in.
Elongation in 2 in.....	25.0%
Reduction of Area	60.0%
Brinell	160



Rice Hotel Cafeteria, Houston, Texas
Architect—A. C. Finn

Enduro used for counter tops, panels, trim, tables, urn stands, structural column inclosures and many other purposes

FINISHES OF ENDURO STEEL

Of primary importance to the architect in designing with Enduro Stainless Steel are the many different finishes in which this unusual metal may be obtained. Unlike plated materials Enduro is the same beautiful color throughout and has no coating to wear off. As it is proof against tarnishing and corrosive attacks, it can be used with every assurance that the original effect will be retained during the entire life of the building.

The various sheet finishes are designated as follows:

- No. 1 Hot rolled annealed and pickled
- No. 2-B Full Finish (Bright cold rolled)
- No. 2-D Full Finish (Dull cold rolled)
- No. 4 Standard Polish on one side or both sides
- No. 6 Standard Polish Tampico Brushed on one or both sides
- No. 7 High Lustre Polish on one or both sides
- No. 8 Mirror Finish on one or both sides

Although the architect will probably select the finish to produce the special effect desired, certain restrictions should be borne in mind and the advice of Republic Steel Corporation representatives or distributors secured on any problems not covered here. For example, the finish possible on the stock will depend to a considerable extent on the amount of forming necessary. It is inadvisable to use polished sheets for extra deep drawing operations where score marks from dies are likely to occur in forming or where it is necessary to reanneal to make a second drawing operation. Our No. 1 Finish should be used under these conditions.

Numerous other applications of the No. 1 Finish may be made at points where appearance is not a primary factor but where corrosion-resistance is important, such as mail chutes, tanks, tubing and a variety of other uses.

No. 2B Finish and No. 2D Finish are the same as No. 1 except that they have a slightly higher finish due to cold roll processing.

Polished finish should be used only where stock will be employed without further working, where the degree of working is small or where finish can be protected so that excessive refinishing is unnecessary.

No. 4 Finish being ground and polished is very satisfactory for interior application. It possesses a ground surface appearance with a medium lustre and is considered the best commercial type of finish for such applications as bank vaults, restaurant and

soda fountain equipment, sterilizers, laundry machinery, packing house refrigerators and equipment, cold storage, canning and preserving equipment, trim for cabinets and numerous other places where a fairly high lustre and ease of cleaning are desired.

No. 6 Tampico Brushed Finish has found more favor for exterior application than No. 4 Finish. No. 6 Finish has a silvery lustre and does not have as high a reflectivity. It can often be used to blend in conjunction with finishes of higher lustre or other metals. Higher lustre finishes such as No. 7, are obtainable and are similar to No. 4 with the exception that the lustre obtained by buffing is much brighter.

No. 8 Finish is the highest obtainable in commercial steel practice. All of the grinding lines are removed and a sheet of high reflectivity is obtained. This finish is used for mirrors and for trim where highest lustre is required.

It may be interesting to review the processing procedure applied to the Enduro sheets used on the Chrysler and Empire State Buildings and more recently on the Richman Bros. Building, Detroit, and the Insurance Company of North America Building, New York, as these may be considered typical of such architectural applications. The sheets, which were of Enduro 18-8, after being hot rolled, annealed and pickled, were rough ground with No. 80 grit used dry, followed by successive grease wheels of 100-120, etc., until the finish desired was obtained. The Chrysler sheets received a relatively high finish followed by buffing and passivation (in nitric acid).

The Empire State Building, Richman Bros. Building, and the Insurance Company of North America Building sheets had a medium finish, followed by a special wheel to dull the lustre, giving a No. 6 Tampico finish. These sheets likewise were given the passivation treatment; then after being formed into panels at the fabricators' plants, they were again passivated, following the removal of the drawing compound by the use of gasoline and whiting. In the foregoing descriptions it has been impossible to give more than a general idea of the appearance of each and the differences between the various effects possible. It has also been found impossible to show these finishes by half-tone engravings. For these reasons we suggest that the architect secure samples of the various finishes from Republic Sales Offices or Enduro Distributors before making a definite selection.

Enduro Stainless Steel Strip

The various finishes of Enduro Stainless Steel strip are designated as follows:

- No. 1 Cold rolled, annealed and pickled. Surface has dull sheen.
- No. 2 Cold rolled, annealed, pickled and given light skin pass. Somewhat brighter surface than No. 1.
- No. 3 Cold rolled, annealed and pickled, with buffing operation. Surface has medium bright lustre.

Enduro Stainless Steel strip is also available in polished finishes, designated as and comparable with sheet finishes Nos. 4, 6, 7 and 8.



National Refining Co. Service Station, Indianapolis, Ind. Architects—Pierre & Wright.
Enduro for Coping and to encase five pilasters at Service Entrances

STORE FRONTS OF ENDURO

In the present trend toward modernism in store front design usually involving the use of gleaming white metals, Enduro fits perfectly. All store front manufacturers in SWEET'S Catalog File are familiar with the fabrication of Enduro and are able to advise architects on the use of Enduro and to fabricate it to the architect's design.

On the preceding pages have been outlined the many characteristics and properties of Enduro Stainless Steel which make it particularly suitable for architectural purposes. Attractive appearance, complete resistance to corrosion and tarnishing, and a wide variety of finishes make Enduro the ideal material for the finest of decorative effects as well as for every purpose subject to possible corrosion.

Because of these qualities it is natural that Enduro has come to occupy a most important place in modern store front construction. In designing a store front the architect plans for a very definite effect. To accomplish this he must use materials which will be striking in appearance, which will contribute to the attention getting character of the complete design and yet which will not detract from the principal

purpose of any window, namely, the sales-influencing display of goods.

Of utmost importance to the designer as well as to the store owner is the matter of upkeep or cleaning. No architect wishes to develop a carefully studied design and then find that, in a short time, the entire effect is ruined by uncared for, unpolished metals, dirty glass, or rusty trim. On the other hand the owner does not wish to feel that his store front is a continual source of upkeep expense. It is essential, therefore, that the architect select a metal which will retain its original beauty as long as it is in place and one which will require only a minimum of cleaning. Enduro will withstand the corrosive action of acids and smoke and rain water. Washing down the window glass, with its accumulated dust, cannot stain the gleaming surface of Enduro Stainless Steel.

In selecting Enduro the architect will find it a decided advantage to be able to use the same metal for glass settings, awning bars, lettering, display signs, ornamental trim and in fact for every part of his design.



Bromley Theatre, Philadelphia, Pa.
Architects—Thalheimer & Weitz

*Ornamental plaques, poster frames and drinking fountain of Enduro.
Ticket booth of Porcelain Enameled Iron with Enduro strips*



S. S. Kresge Co., Cleveland, Ohio

*Trim on front windows, trim on front, flashing and canopy over sign of Enduro.
Background of sign is Porcelain Enamel*



Walter's Restaurant, Philadelphia, Penna.

Architects—Thalheimer & Weitz

Enduro for the sign. On interior Enduro was used for lighting fixtures and wall mirrors and for several purposes on the two bars



Lamey-Wellehan Store,
Lewiston, Maine

Architects—H. S. Coombs and
Alonzo J. Harriman

*Enduro for window moulding,
push plates and bars, cornice, sign
and for mullions between win-
dows on second and third floors*



George B. Peck Department Store, Kansas City, Mo.

Architects—Bovard & Drake

Enduro used for signs, marquee and store front



"Zapateria Del Leon," Buenos Aires, Argentine Republic

Enduro used for the sign



The Pennsylvania Diamond Exchange, Philadelphia, Penna.

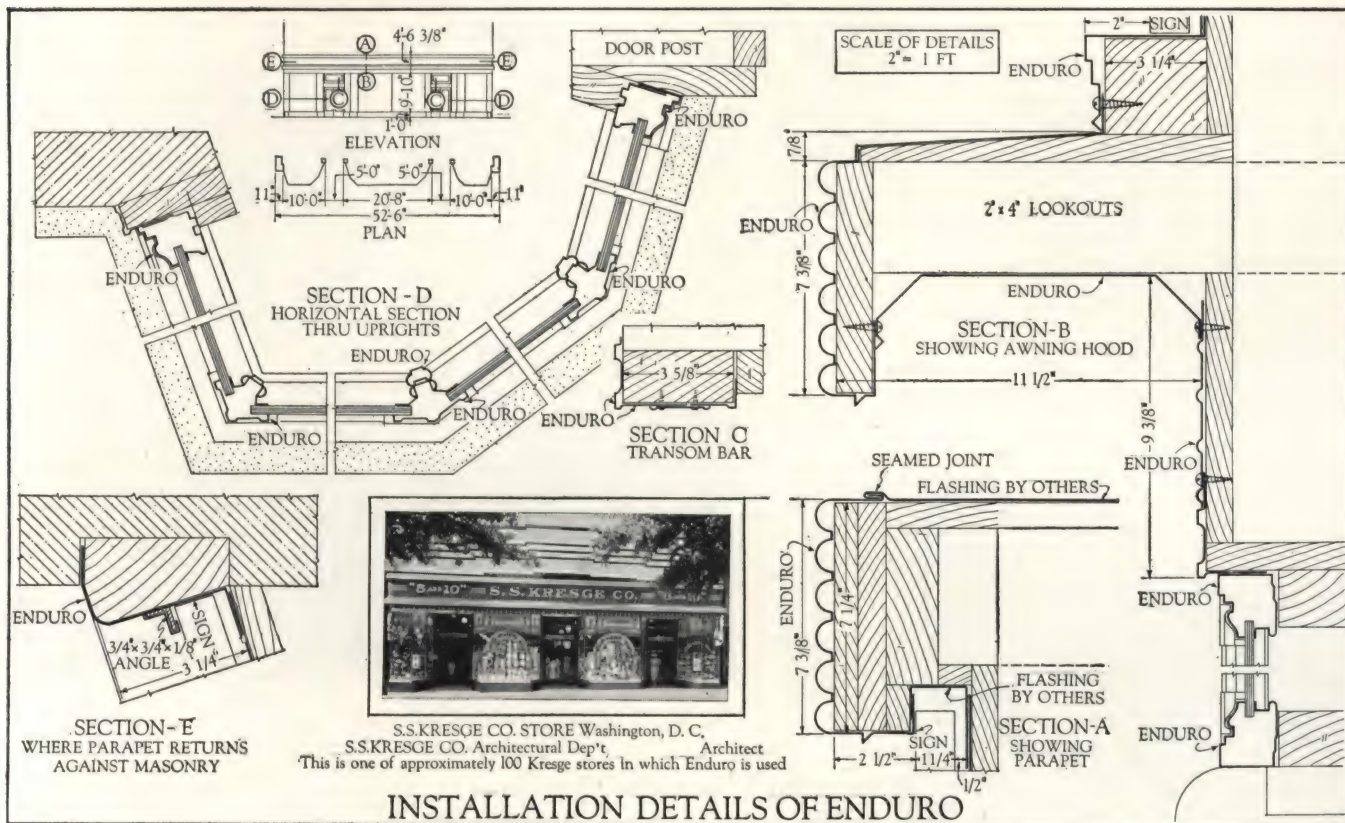
Architect—Solomon Kaplan

*Enduro for grille on doors, letters in sign, paneling under windows
and trim above windows and doors*

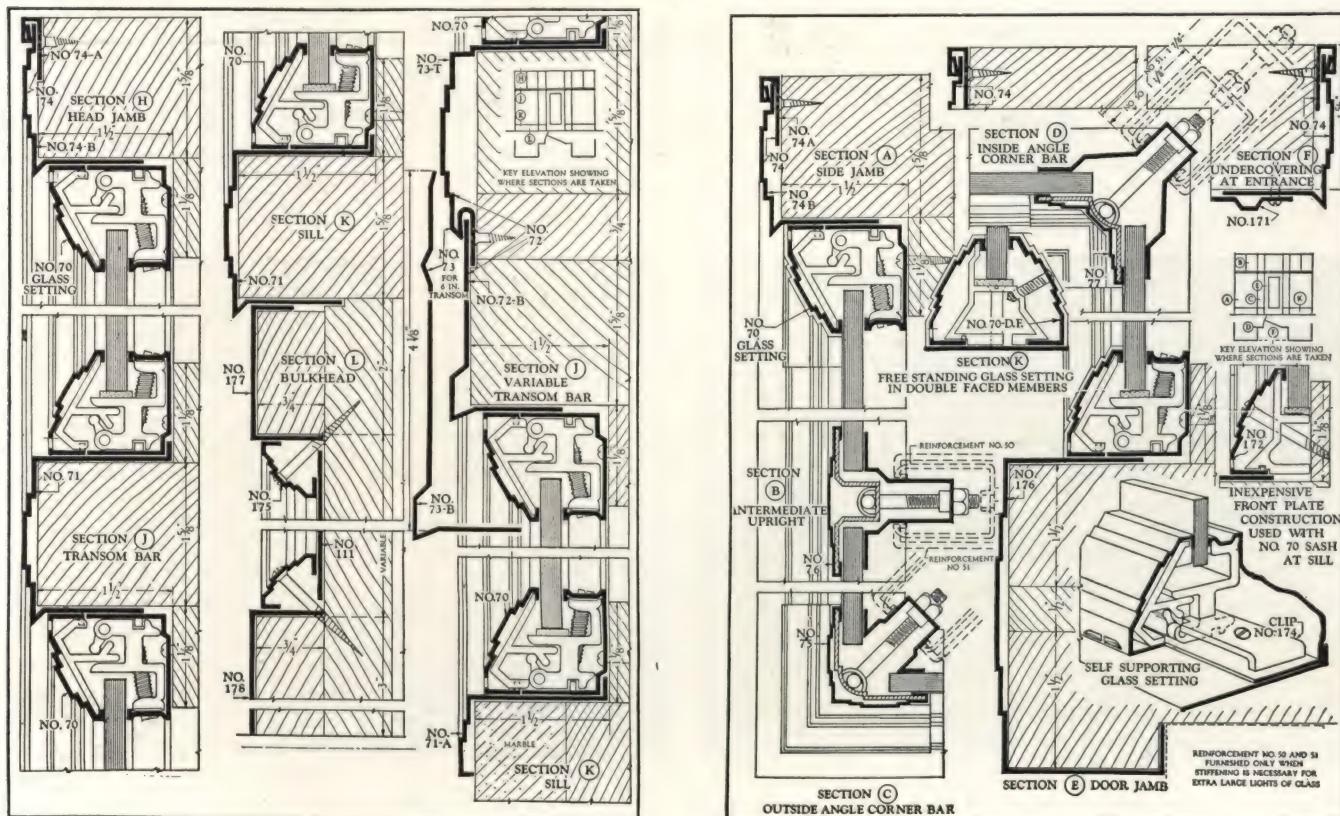
● ENDURO STAINLESS STEEL

STORE FRONT CONSTRUCTION OF ENDURO STAINLESS STEEL

Fabricated by Sioux Metal Products Co., Sioux City, Iowa



"Himco" No. 70—The Himmel Brothers Co., New Haven, Conn.



ENDURO FOR BARS AND BAR EQUIPMENT

On one of the preceding pages is given a partial list of the many and varied uses of Enduro for utilitarian as well as purely decorative purposes. Whether the conditions called for a material having a beautiful appearance or one which would provide maximum resistance to wear and corrosion or both, Enduro has met every demand with complete satisfaction. Only a few of these uses are shown in this catalog but REPUBLIC STEEL CORPORATION will welcome inquiries regarding any specific installations under consideration.



Mayfair Club, Boston, Mass.
Designer—Eastman Decorators, Inc.
Enduro for bar work board



Twentieth Century Tavern, Philadelphia, Pa.
Architect—Max A. Bernhardt
Enduro beverage and serving cabinet and the complete unit behind the bar

Enduro has always found one of its most appropriate uses in connection with food service equipment and it was natural that, with the advent of Repeal, Enduro should become a favorite metal for bar equipment. However, the architect's attention is particularly directed to the richly decorative possibilities of Enduro's silvery lustre in modern design. A few typical installations are shown here and many more have been made during the past year. Not only does Enduro meet every requirement of the designer but, for all bar and service equipment such as sinks, tanks, drainboards, counters and table tops, Enduro assures maximum sanitation and permanent resistance to tarnishing, corrosion and general wear.



Hotel Edison, New York, N. Y.
Designers—Eastman Decorators, Inc.
Enduro for bar work board and decoration about the fountain



McDoel's, Inc., Buffalo, N. Y.
Designer—M. J. Bernhard Co.
Enduro for back of bar, panels on front, wall panels and all bright metal

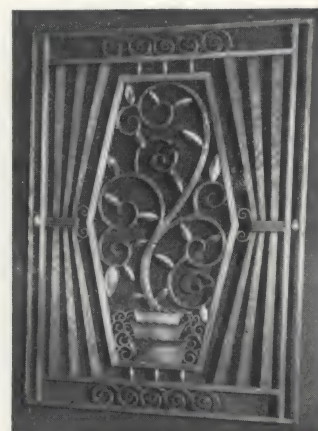
MISCELLANEOUS USES OF ENDURO



Hand Wrought Grille of Enduro
Stainless Steel
Designer—Rose Iron Works, Inc.



Public Information Booth, Canton, Ohio.
Enduro for exterior walls, doors, sash
and etched acknowledgment plate



Hand Wrought Grille of Enduro
Stainless Steel
Designer—Rose Iron Works, Inc.



Municipal Incinerator, Shreveport, La.
Architects—Jones, Roessle, Olschiner and Weiner
Supervising Engineer—Marcus D. Weeks
Enduro for copings on walls of building



Photo: Harold Haliday Costain
Gifford Cochran Residence, North Salem, N. Y.
Architect—Albert Ely Ives
Enduro Stainless Sink, Drainboards and Counter Tops by
Tracy Mfg. Co. Steel Cabinets by Excel Metal Cabinet Co., Inc.



Wills Hospital, Philadelphia, Pa.
Architect—John T. Windrim
Enduro for drinking fountain



Bromley Theatre, Philadelphia, Pa.
Architects—Thalheimer & Weitz
Enduro for drinking fountain



U. S. Government Dredge "Savannah," Buffalo, N. Y. Enduro for
lining of shower cabinets



A FEW FAMOUS BUILDINGS IN WHICH ENDURO HAS BEEN USED

Included are the Empire State Building, New York, N. Y.; Insurance Company of North America Building, New York, N. Y.; Southtown Theatre, Chicago, Ill.; Warner Bros. Theatre Building, Nashville, Tenn.; La Nacional Building, Mexico City, Mexico; Richman Bros. Store Building, Detroit, Mich., and the tower of the Chrysler Building, New York, N. Y.

TYPICAL METHODS OF INSTALLING ENDURO STAINLESS STEEL

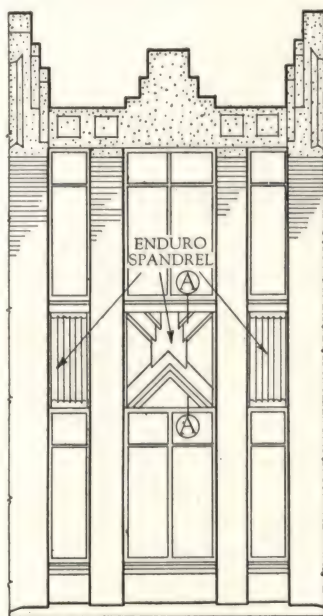
For nearly all of the more common applications of Enduro Stainless Steel the usual methods of detailing and installing any metal work will be found to be perfectly satisfactory. However, the remarkable properties and characteristics of Enduro make it suitable for use in locations heretofore impossible with metals subject to corrosion or which would not permanently retain the desired finish.

Such applications are receiving careful study to insure the most economical and satisfactory method of

installation, and unusual and time-saving details have been developed. Believing that the architect will be interested in studying some of the outstanding examples of such installations we have assembled data regarding the Enduro Stainless Steel used on a few recent buildings.

Republic Steel Corporation distributors and representatives will be glad to co-operate with the architect in developing methods to suit his particular problems.

McCOOK COUNTY COURT HOUSE, SALEM, S. D.



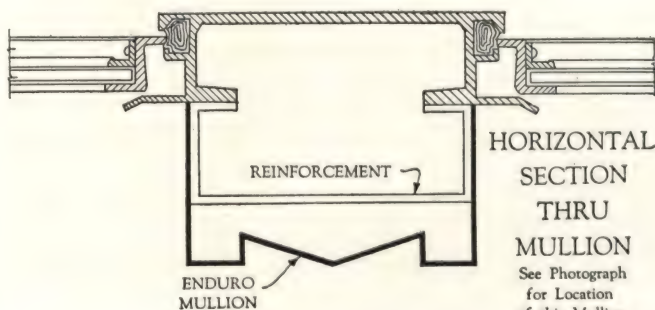
PART ELEVATION
SHOWING
ENDURO SPANDRELS



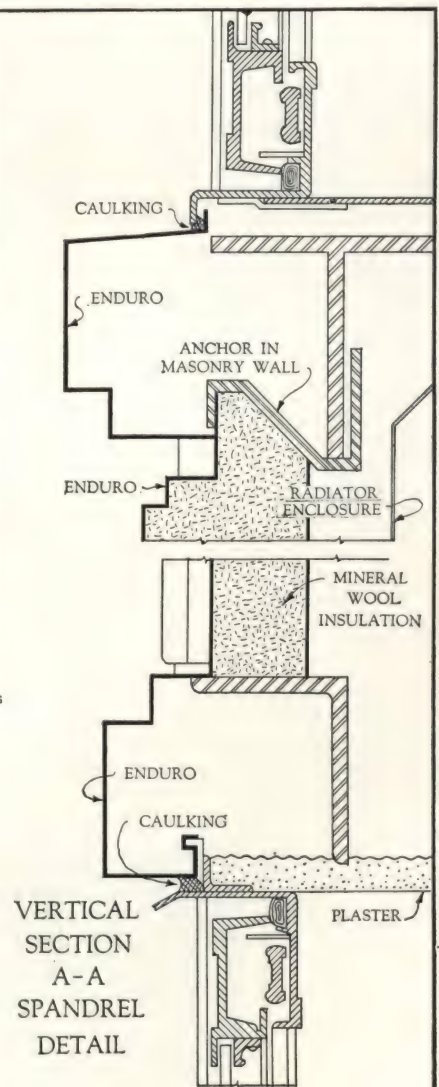
STAIR RAILINGS OF ENDURO
Mc COOK COUNTY COURT HOUSE SALEM, S. D.



Mc COOK COUNTY COURT HOUSE, SALEM, S. D.
Floyd F. Kings and Walter J. Dixon Architects
D. Floyd Rosser, Assoc. Architect



HORIZONTAL
SECTION
THRU
MULLION
See Photograph
for Location
of this Mullion



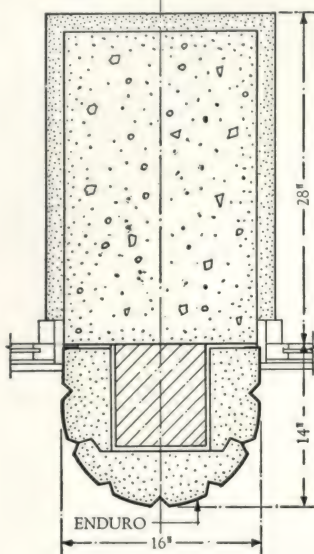
VERTICAL
SECTION
A-A
SPANDREL
DETAIL

INSTALLATION DETAILS OF ENDURO

SCALE OF DETAILS 3" = 1'

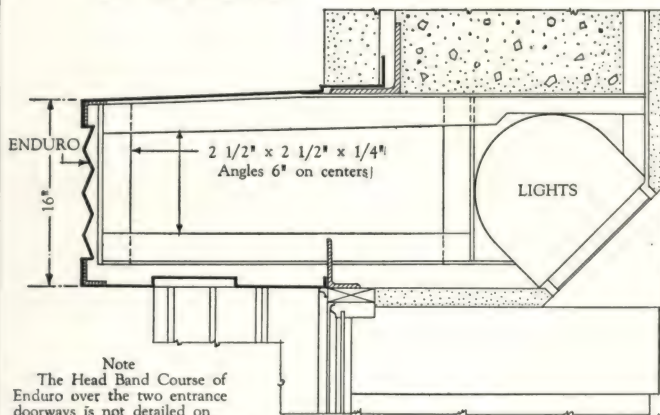
**OFFICE AND DISPLAY BUILDING
CHRYSLER CORPORATION, DETROIT, MICH.**
Albert Kahn, Inc., Architects

The details below show the methods used for installing Enduro Stainless Steel in the new \$340,000 office and sales building of the De Soto Motor Corporation and the Chrysler Sales Corporation in Detroit. The building includes a model showroom with a complete front of plate glass and the interior is air conditioned. Enduro was used on the towers, as trim around the entrance doorways, across the top of the show windows and on the columns between the windows. Enduro was also used extensively on the Chrysler Building in New York.



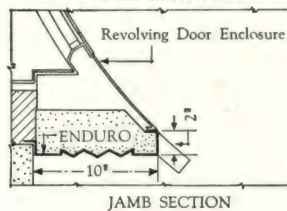
COLUMNS BETWEEN
SHOW WINDOWS

**INSTALLATION
DETAILS
OF ENDURO**

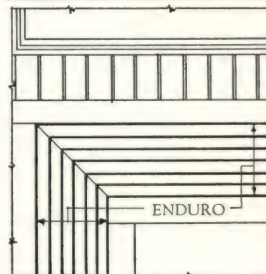


TRIM ACROSS TOP
OF SHOW WINDOWS

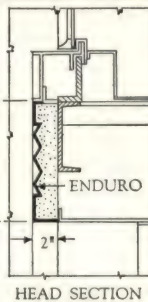
Note
The Head Band Course of Enduro over the two entrance doorways is not detailed on this sheet; it is, however, similar to the detail of Enduro Band Course across the top of show windows, as shown



JAMB SECTION

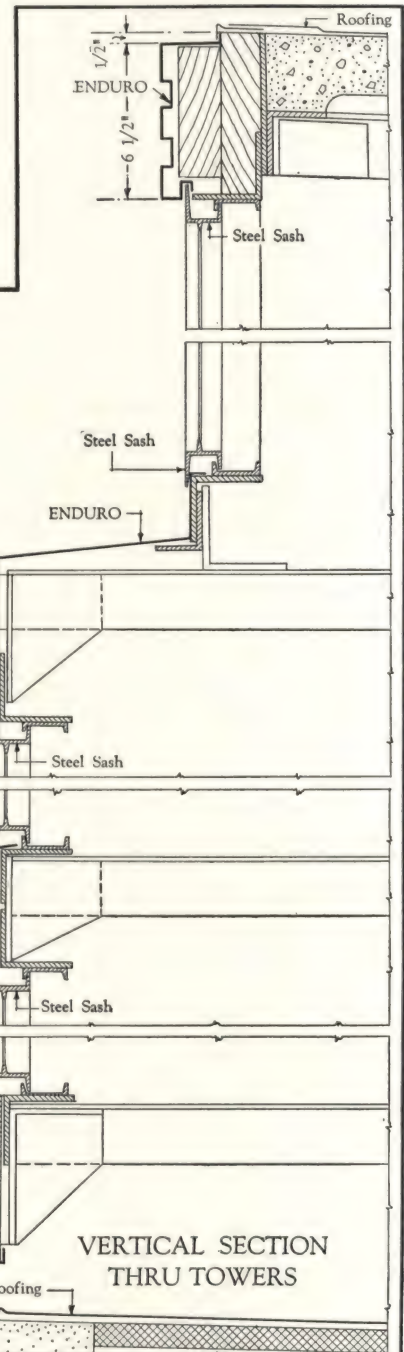


PART ELEVATION



HEAD SECTION

**TRIM AROUND
MAIN
ENTRANCE
DOORWAYS**



VERTICAL SECTION
THRU TOWERS



OFFICE AND DISPLAY BUILDING OF THE CHRYSLER CORPORATION
Albert Kahn, Inc. DETROIT, MICHIGAN Architects

TONCAN IRON

THE MODERN FERROUS ALLOY FOR RUST-RESISTANCE AND CORROSION-RESISTANCE

As originated over 28 years ago, Toncan Iron was a highly refined iron, unalloyed with other elements but containing a minimum of rust-promoting impurities. Subsequent changes resulted from continuous research and relentless testing. Copper, in proper proportion, was alloyed with iron to form a new iron-copper alloy which was more resistant to rust than the original iron. Then followed the addition of molybdenum which produced an iron-copper-molybdenum alloy with a resistance to rust never before attained. Experience has demonstrated that neither copper nor molybdenum alone can contribute its full individual properties to the iron—



it is only through the addition of *both* in correct proportions that these can be realized. Such is Toncan Iron of today . . . an open hearth iron, scientifically refined to reasonable limits, in which not less than .40% copper and .07% molybdenum are uniformly dissolved . . . an alloy with a proved superior resistance to rust among the ferrous metals in its price class. Time and tests have conclusively proved that Toncan Iron brings to users of sheets (see page 19), plates (see page 20), finished products (see page 20), and pipe (see File Index), certain standing advantages which are briefly enumerated below.

How Toncan Iron Resists Rust and Corrosion

We have stated that, from the standpoint of resistance to rust and corrosion, Toncan Iron holds first place as a commercial ferrous sheet and pipe material.

Tests in the laboratory and in actual service unquestionably bear out this statement.

Duplicate samples, 5x7 in., were cut adjacent to each other from galvanized sheets of each of the materials tested—Toncan

Iron, Copper Steel, Pure Iron and O. H. Steel (Low Copper).

These samples were placed side by side, insulated from each other, on a test fence for a period of six years. The results are shown below.

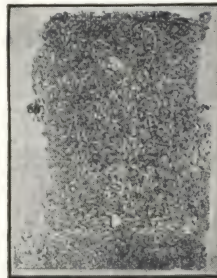
Authoritative, impartial testing associations, both in this country and abroad, have confirmed the results of his exposure test demonstrating clearly how Toncan Iron resists rust and corrosion.



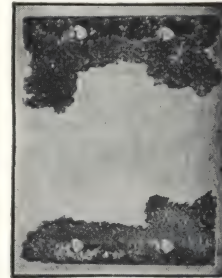
Toncan Iron



Copper Steel



Pure Iron



O.H. Steel

Samples After Having Been Placed Side by Side, Insulated from Each Other, on a Test Fence for a Period of Six Years

Physical Properties of Toncan Iron

The analysis and the chemical and structural uniformity of Toncan Iron assure satisfactory and dependable physical properties. Toncan Iron is unique in that it combines with its remarkable rust- and corrosion-resistance, physical properties not found in the best grades of open hearth steel. Many of these properties are due to the alloy addition of molybdenum. This element entirely dissolves without loss in the iron and thereby has a positive and beneficial effect. It produces a grain refinement which results in an improvement in strength and ductility, as well as greater rust-resistance. It increases the ability of the metal to withstand shock. It increases the susceptibility of the metal to heat treatment. It

increases the elastic ratio, that is, the ratio between elastic limit and tensile strength. These advantages are reflected in the following figures, showing a range for all Toncan Iron Products, arrived at after repeated tests: *Tensile strength*, 45,000–58,000 lbs. per sq. in. *Elastic limit*, 30,000–40,000 lbs. per sq. in. *Elongation in 2 in.* 30–40%. *Reduction of area*, 60–80%. *Rockwell hardness*, 36–46 (B scale). *Brinell hardness*, 90–120. *Specific gravity*, 7.88 approximately; about 2% greater than that of unalloyed iron or steel. *Electrical conductivity* about 12½% that of copper. *Thermal conductivity*, slightly better than steel or iron products. *Co-efficient of expansion*, .00000674 in. per degree F. melting point, 2775° F.

Physical Constants of Toncan Iron

Weight—.283 lb./cubic inch.

Specific gravity—7.88 or approximately that of iron or steel.

Melting point—2775° Fahrenheit.

At room temperature (20° C. or 68° F.):

Electrical resistivity—eight times that of copper or approximately .0000137 ohm/cm. cube = 13.7 microhm/cm. cube = 77 ohm/circular mil foot.

Electrical conductivity—12½% that of copper or approximately 73,000 reciprocal ohm/cm. cube = .013 ohm/circular mil foot.

Thermal conductivity—Slightly better than iron or steel or approximately .18 cal/cm. cube/sec/degree C = .7 watt/cm. cube/sec/degree C.

Linear co-efficient of thermal expansion—.0000121 cm./cm./degree C., 0–100° C. = .00000674 inch/inch/degree F., 32–212° F.

Toncan Iron Is Easy to Form

Toncan Iron is exceedingly ductile and can be formed into any commodity which is ordinarily made of sheet steel or iron. It is much softer than mild steel and, because of its workability, it can be deep drawn, formed, bent, flanged, stamped or spun. It is easy to cut or shear and requires less power and less labor for working. Toncan Iron can be annealed at a temperature of 1200° to 1250° F., to relieve strains caused by working and can be normalized at a temperature of 1700° F., followed by cooling in air to improve the grain structure of the iron after working. It can be welded, soldered, brazed, riveted, etc., and may be protected with various coatings or galvanized, galvanized, sherardized, etc. The re-



markable rust-resistance of Toncan Iron extends uniformly throughout the entire thickness of the metal—not on the surface only—and it is the only commercial ferrous material with rust-resistance practically unaffected by cold-working or deformation. Other ferrous sheet materials ordinarily first dissolve and rust most rapidly at or adjacent to parts which have been cold-worked—such as seams, cut ends, bends and punched holes. The samples shown at the left were bent cold and, for four weeks, were immersed in a 20% solution of sulphuric acid at room temperature. The result demonstrates the ability of Toncan Iron to resist corrosive attack *after* fabrication as well as before.

Remarkable Welding Properties of Toncan Iron

The excellent welding properties and smooth-flowing behavior of Toncan Iron are valuable in that they make Toncan Iron the ideal metal for work where all joints are to be welded. Toncan Iron lends itself equally well to welding by either the electric arc or gas process. In gas welding, a slight reducing flame should be maintained in order to reduce oxidation to a minimum. In electric arc welding, the use of coated Toncan Iron Welding Rod is recommended. In gas welding, the deposited metal is practically as resistant

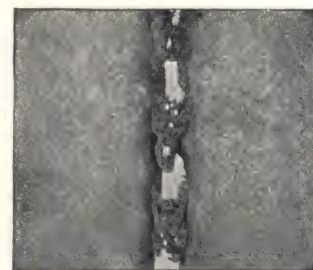
to corrosion as the metal itself. This is due to the fact that there is no change in the alloy during the welding operation, for the copper and molybdenum remain unaffected in their relation to the iron with which they are alloyed. Practically the same results can be obtained by the electric arc method, but the use of Toncan Iron electrodes is recommended. The use of Toncan Iron Welding Wire insures a completed job of uniformly high resistance to rust and corrosion throughout.



Illustrating the Ductility of Toncan Iron Arc Welds

Left:
Arc Weld Made with
Coated Toncan
Iron Wire
After testing in 20%
sulphuric acid for 10
hours. Weld in good
condition

Right:
Arc Weld Made with
Common Steel Wire
After testing in 20%
sulphuric acid for 6
hours. Weld failed



The Advantages of Toncan Iron

(1) It resists, to a higher degree than any other ferrous material in its price class, the attacks of natural forces which cause corrosion.

(2) Its high resistance to rust and corrosion is not confined to the surface or skin of the metal. Toncan Iron is uniformly resistant throughout its *entire cross-section*.

(3) It combines with the high rust-resistance of an alloy iron, many desirable physical qualities not found in the highest grade open hearth steels.

(4) It is one of the most ductile of materials. It is remarkably soft. It forms easily.

(5) Unlike other ferrous materials, cold working—cutting,

bending, punching, stamping, drawing, etc., has practically no effect upon rust-resistance of Toncan Iron.

(6) It welds easily by any of the usually accepted modern methods. The use of Toncan Iron Welding Rod insures an installation of equal rust-resistance throughout.

(7) A uniform and tightly adherent galvanized coating can be applied, thus adding the protection of a coating of zinc to the already high rust-resistance of the base metal itself.

(8) Through its longer service-life, it has been found to cost far less per year of service. Its use is more than an economy. It is greater insurance against sheet and pipe failures and frequent costly replacements.

● TONCAN IRON SHEETS

TYPES AND FINISHES OF TONCAN IRON SHEETS

Below are given, in brief, the various types and finishes in which Toncan Iron Sheets are available. Any assistance desired in the selection of the proper material for any specific use will be given gladly upon request to the nearest District Sales Office listed on the back cover of this catalogue.

●TONCAN IRON GALVANIZED

These are rust-resisting Toncan Iron Sheets, with the added protection of a heavy coating of pure zinc, hot dipped. They are available in gauges 8 to 28 inclusive.

●TONCAN IRON HOT ROLLED, ANNEALED

These sheets are those which were formerly referred to as One Pass Cold Rolled and Box Annealed Toncan Iron Sheets. They are made in gauges 17 to 26 inclusive.

●TONCAN IRON HEAVY HOT ROLLED, ANNEALED

These heavy hot rolled, annealed, Toncan Iron Sheets are the successors to the formerly well-known Toncan Iron Blue Annealed Sheets. They are made in gauges 9 to 16 inclusive.

●TONCAN IRON ENAMELING SHEETS

These popular Toncan Iron Sheets are made with a specially prepared surface designed to grip the vitreous enamel coat—a superior sheet for all enameling purposes. They are made in gauges 9 to 24 inclusive. *Note:* Toncan Iron is also now available in Tin Mill gauges and sizes. May be had as light as 30 gauge Tin Mill Rolling only.

●TONCAN IRON HEAVY COLD ROLLED

Here is a heavy cold rolled sheet free from scale and surface defects and which is especially popular where a smooth and rust-resisting product is desired. Made in gauges 9 to 16 inclusive.

●TONCAN IRON COLD ROLLED

This Toncan Iron Sheet is used largely in partitions, automobile construction and in all places where the need for a smooth, glossy surface and for rust-resistance demands a better product. These sheets are made in gauges 17 to 24 inclusive.

●TONCAN IRON GALVANNEALED

Toncan Iron Galvannealed Sheets are made by a patented process whereby the galvanized coating becomes impregnated into the base iron, making it impossible to peel or flake under the most difficult forming operations. They are made in gauges 14 to 28 inclusive.

●TONCAN IRON OVEN LINING GALVANNEALED

These Toncan Iron Sheets are made by a patented process specially designed to meet the exacting requirements of an oven lining where there has been so much trouble in peeling, rusting, etc. Used by many of the world's largest stove manufacturers, Toncan Iron Oven Lining Galvannealed is made in gauges 24 to 26 inclusive.

●TONCAN IRON TERNE COATED

This very popular Republic product is a lead and tin coated Toncan Iron Sheet applicable to all uses where such coating is preferred. It is especially useful where difficult forming operations are used and is made in gauges 14 to 26 inclusive.

MAXIMUM SIZES OF SHEETS

This table indicates the rolling limits of Toncan Iron Sheets in hot rolled, annealed, galvanized, heavy hot rolled annealed and special finishes—with the exception that hot rolled, annealed Toncan Iron Sheets are not made lighter than 26-gauge, while galvanized sheets are not supplied in greater length than 144 in.

Width, Inches	50	48	46	44	42	40	38	36	34	32	30	28	26	24
Gauge	Length in inches													
No. 7 and 8	120	120	120	120	120	120	120	120	120	120	120	120	120	120
No. 9 and 10	168	168	168	168	168	168	156	156	156	156	144	144	144	130
No. 11 and 12	168	168	168	168	168	168	168	168	168	168	168	144	144	130
No. 13 and 14	156	156	156	156	156	156	156	156	144	144	144	144	144	130
No. 15 and 16	144	144	144	144	144	144	156	156	144	144	144	144	144	130
No. 17 and 18							120	144	144	144	144	144	120	120
No. 19, 20, 21, 22, 23, 24							144	144	144	144	144	144	144	144
No. 25, 26, 27							120	144	144	144	144	144	144	144
No. 28								144	144	144	144	144	144	144

REPUBLIC STEEL CORPORATION

TONCAN IRON PLATES

In Toncan Iron Plates, REPUBLIC STEEL CORPORATION makes available a worthy "big brother" to Toncan Iron Sheets. Made of Toncan Copper Molybdenum Iron—with all of its remarkable rust- and corrosion-resisting qualities and greater ductility—Toncan Iron Plates meet an insistent demand from those industries requiring heavy rust-resisting plates. Railroads through-

out the nation, for instance, are turning to Toncan Iron Plates. They are also being widely used for stacks, boilers, tanks in shipbuilding—in fact wherever a heavy iron plate that insures long trouble-free service is desired. Toncan Iron Plates are made in a large range of gauges and sizes as shown in the following table:

Thickness	Widths and lengths, inches																				Diameter of circles, inches	
	24	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120	126	132	138	144		150
No. 10 BWG...	320	300	340	320	300	300	290	290	300	220	...	...	...	...	...	...	...	...	...	...	...	72
No. 8 BWG...	480	300	480	480	400	380	350	300	480	480	480	460	400	280	240	240	200	275	240	220	220	84
1 1/4"	480	480	480	480	480	480	480	480	480	480	480	480	480	480	360	360	300	280	250	240	240	120
	480	480	480	480	490	490	490	480	480	480	480	480	480	380	360	360	300	280	250	240	240	144
1 1/2"	480	480	480	480	490	490	490	490	490	460	430	430	400	360	360	320	300	280	250	240	240	150
	480	480	480	480	490	490	490	490	490	460	430	430	400	360	360	350	330	310	300	270	210	152
1 3/4"	410	450	510	550	580	580	580	550	520	500	500	480	440	400	380	360	350	330	310	300	270	152
	410	460	550	620	640	640	640	600	600	600	600	580	450	450	430	400	400	380	360	340	320	152
2"	410	460	580	630	640	640	640	640	640	640	640	640	540	540	520	520	480	460	440	420	400	152
	410	460	580	640	640	640	640	640	640	640	640	640	540	540	540	520	480	480	440	420	380	152
2 1/4"	410	460	580	640	640	640	640	640	640	640	640	640	550	540	540	520	480	450	420	400	370	152
	410	460	580	640	640	640	640	640	640	640	640	640	600	600	540	520	480	450	420	400	370	152
2 1/2"	410	460	580	640	640	640	640	640	640	640	640	640	600	600	540	520	480	450	420	400	370	152
	410	460	580	640	640	640	640	640	640	640	640	640	600	600	540	520	480	450	420	400	370	152
2 3/4"	410	460	580	640	640	640	640	640	640	640	640	640	600	550	550	530	510	460	450	420	400	152
	410	460	580	640	640	640	640	640	640	640	640	640	600	550	550	530	510	460	450	420	400	152
3"	410	450	580	640	600	600	600	600	600	600	600	550	550	550	530	510	460	450	420	400	370	152
	410	450	580	610	580	550	550	550	550	550	550	550	550	520	500	480	430	400	370	350	330	152
3 1/4"	410	450	540	520	520	520	520	520	520	510	500	500	500	500	500	480	430	400	370	350	330	152
	200	350	470	480	520	520	520	520	520	490	480	480	480	480	460	420	390	360	340	320	190	150
3 1/2"	200	200	450	460	500	500	500	460	430	470	440	440	440	440	440	420	390	360	340	320	190	150
	200	200	430	440	480	480	460	420	400	450	380	360	420	420	410	400	360	360	330	300	144	144
3 3/4"	200	200	400	400	400	400	370	350	350	360	340	320	400	390	370	350	330	320	310	300	144	144

Note: If widths and lengths other than those above are required, tell us your requirements—special sizes are made to specifications.

TONCAN IRON FINISHED PRODUCTS

Corrugated Sheets

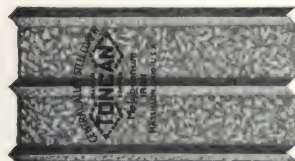
Corrugated sheets are light in weight and have great lineal rigidity. They add strength and allow a considerable saving in sheathing and other supporting materials necessary with weaker or heavier materials. These advantages, with the fire protection offered by corrugated sheets, account for their almost universal use in roofing and siding for industrial buildings, warehouses, mine buildings, etc. Corrugated sheets are also ideal for barns, garages, sheds and a wide variety of other buildings.

Corrugated sheets are standard in 2 1/2 in. and 1 1/4 in. corrugations. In the 2 1/2 in. sheets the corrugations are 2 3/8 in. center to center and 1/2 in. deep. All gauges No. 10 and lighter. Widths: Siding—26 in.; Roofing—27 1/2 in. Lengths: 5, 6, 7, 8, 9, 10, 11 and 12 ft. In the 1 1/4 in. sheets the corrugations are 1 1/2 in. center to center and 3/8 in. deep. Gauges No. 20 and lighter. Width, 26 in. Lengths: 5, 6, 7, 8, 9, 10, 11 and 12 ft. Can be furnished curved at one or both ends to specifications, cross-corrugated, or cross-crippled for cornice and similar work.

V-Crimped Roofing

V-Crimped is the oldest form of iron roofing and has been used extensively. Construction is simple and makes a good appearance at reasonable cost. Can be applied over close sheathing, to strips spaced four or five inches apart or over old shingles (in the latter case a 3-in. nail should be used). The three V-crimped makes a stiffer sheet, while five V-crimped is still stronger.

All three styles are supplied in lengths of 5, 6, 7, 8, 9, 10, 11 and 12 ft., and in gauges 20 and lighter. Actual covering width of each style is 24 in. With this type of roof V-shaped wood strips are necessary. These are supplied when ordered.



Three V-Crimp Roofing

Standing Seam Roofing

This type of roofing is strong and attractive in appearance. It can be applied over shingles, over close sheathing or to strips. No nails are driven through the roofing sheets, but this type of roof properly applied has perfectly water-tight joints. Pressed Standing Seam Roofing is supplied in sheets 5, 6, 7, 8, 9, 10 or 12 ft. long, in 28 and 27 gauges galvanized and in gauges 26, 24, 22 and 20 either painted or galvanized. Covering width in all cases 24 in.

Roll Roofing

This is an excellent form of roofing and is often preferred for large areas and where pitch is slight. Cross seams are double locked and notched, and end lock is protected by V wood strip. Each roll is 50 ft. long and perfectly straight, sides and ends of each sheet having been resquared before galvanizing. The sheets are full width to give a covering width of 24 in. or 100 sq. ft. to the roll.



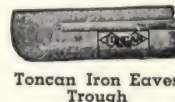
Roll Roofing

Ridge Roll, Eaves Trough, Wall Flashing



Toncan Iron Conductor Pipe

Round corrugated, square corrugated and plain round conductor pipe. Lengths, 8 and 10 ft. All diameters. Elbows, miters and cut-offs to match.



Toncan Iron Eaves Trough

Lengths, 10 ft. All widths: 28 and gauges Nos. 28, 26 and 24



Corrugated Ridge Roll



Corrugated End Wall Flashing

Flat side on wall, 2 in. Corrugated apron, 4 in. Lengths, 27 and 96 in.

2 1/2 or 1 1/4-in. corrugations. Lengths, 27 and 96 in.

● TONCAN IRON SHEETS



Louisville Girls' High School, Louisville, Ky.
Architect—J. Meyrick Colly, School Board Architect
All Senior and Junior Cafeteria equipment of Enduro Stainless Steel. All water and steam connections of black and galvanized Toncan Pipe



Model Home of America, Atlantic City, N. J.
Supervising Architects—Rosenstein & Puron
Toncan Iron Sheets used for ducts of air conditioning system

ARCHITECTURAL USES OF FABRICATED TONCAN IRON

Why Architects and Engineers Specify Toncan Iron

After devoting months, even years, to the creation and design of a beautiful building, the architect has just cause to take pride in his work and to seek means of endowing it with permanence. He wishes to give full measure in quality to the client who has entrusted him with specifying those materials which best meet service requirements. Toncan Iron brings to the building industry the highest degree of resistance to rust and corrosive action obtainable among ferrous metals in its price class. It also insures economy of installation through its unsurpassed ductility and working qualities.

Because of its versatility, Toncan Iron has met with broad usage from engineers and has proved itself in countless installations under severe service conditions. Structural engineers prefer Toncan Iron for roofing, siding, partitions, pipe and many other applications too numerous to mention. Heating and ventilating engineers specify Toncan Iron for all sheet metal work in heating, ventilating and air conditioning installations.

The truth of every claim made for Toncan Iron as to its durability, economy and other superior merits has been confirmed by the verdict of the leading architects and engineers.

Typical Uses of Toncan Iron

Air conditioners
Airplane hangars
Awning covers
Balustrades
Bathroom cabinets
Belt guards
Blower ducts
Boiler breechings
Boiler jackets
Bolts
Bridge arches
Brine tanks
Bulletin boards
Cabinet heaters
Cabinets
Canopies
Catch basins
Chimney tops

Cistern filters
Clothes chutes
Clothes dryers
Coal chutes
Coils for steam and hot water lines
Concrete forms
Condensation pans
Conductor pipe
Conduits
Coping
Cornices
Dampers
Dishwashers
Doors (exterior)
Downspouts
Drainboards
Drinking fountains

Dryers
Ducts, heating, ventilating and air conditioning
Dust collectors
Eaves trough
Electric heaters
Electrical terminal boxes
Expansion tanks
Fan housing
Fire doors
Flashing
Forged iron lanterns
Furnaces and pipes
Gas radiators
Gas and oil pipe
Gravel strips for roofs
Gutters
Hospital equipment

Hotel and restaurant equipment
Humidifying pans
Incinerators
Kitchen cabinets
Laboratory equipment
Laundry tubs
Lighting fixtures
Lockers for bathing benches
Louvers
Mail boxes
Marquees
Metal ceilings
Metal doors
Metal partitions
Metal trim
Pilasters
Pipe

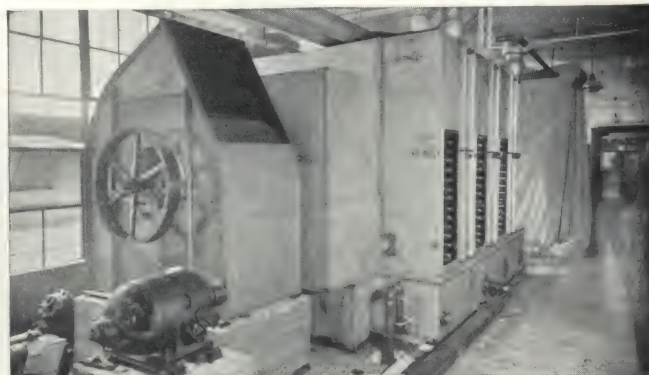
Playground equipment
Porcelain table tops
Radiator shields
Range boilers
Ranges (coal, gas, electric, oil and gasoline)
Reflectors
Refrigerators
Registers
Roofing
Roof flashings and valleys
Rubbish burners
Septic tanks
Shingles (metal)
Siding
Signs
Sinks

Skylights
Smoke stacks
Stand pipe
Switch boxes and covers
Tile (porcelain enameled)
Tubing
Underground garbage holders
Urns
Vats
Wall boxes
Waste paper boxes
Water tanks
Window boxes
Window frames
Window sash
Window ventilators
Wire fence



Walnut Storage Warehouse, Huntington Park, Cal.
Architect—Albert C. Martin

Toncan Iron Corrugated Sheets for roofing. Toncan Iron Flat Sheets for skylights, flashing and gutters. Toncan Pipe for plumbing



United Drug Company, St. Louis, Mo.
Engineer—R. H. Tait & Sons Corp.

Toncan Iron Pipe and Sheets for ammonia evaporator in air washer of air conditioning system

TONCAN IRON ENAMELING STOCK

Porcelain enamel offers the architect a permanent, flexible medium, almost unhampered as far as range of colors or workability goes. He need not use it to imitate some other medium. Rather he may follow the modern trend to the frank use of materials in their own form—steel as steel, wood as wood, concrete as concrete, porcelain enamel as porcelain enamel.

Although only recently have the decorative as well as practical possibilities of enameled iron engaged the attention of architects, it is interesting to note that Toncan Iron has been used for years as the base metal for all types of vitreous enameled products.

Toncan Iron Enameling Sheets have been and are being used for forming all kinds of manufactured products such as washing machine tubs, gas and electric stove parts, sinks, drainboards, shelving, signs and many others which are later enameled. Toncan Iron has proved completely satisfactory as a base for such products which are usually subjected to far more severe service than will be most of the enameled products used in architectural applications.

Its use for architectural purposes has increased at the same rate as has the development of easily fabricated and enameled sheets, and the development of durable enamels.

The architect need not fear the impossibility of rendering a structural creation in porcelain enamel since Toncan Iron Enameling Sheets are custom made to insure easy fabrication into any form or shape which he may conceive. Because of their absolute flatness and uniform freedom from waves, Toncan Iron Enameling Sheets are ideal for flat surfaces, such as panels, counters, walls, signs, etc.

In no other permanent medium is the architect able to make such lavish or unrestricted use of color. Modern frits produce long-lasting, color-fast, non-corroding, and (when so specified) acid-resisting porcelain enamels. Modern base metals such as Toncan Iron Enameling Sheets, provide a workable, easily formed base for these enamels.

Applications of Porcelain Enameled Iron in Building Construction

The modern store, restaurant, filling station, office building and home is undergoing a rebirth in design. Mercantile establishments are dropping sombre colors and utilizing colorful store fronts and interiors to attract customers. Restaurants realize that a clean, sanitary appearance is as important as good food and service. Gasoline filling stations must depend upon their appearance to attract passing motorists. Office buildings are making use of materials which reduce the cost of cleaning and maintenance. Homes need inexpensive materials which are durable and beautiful.

To all of these porcelain enamel is a medium which fulfills all reasonable requirements of economy, beauty, flexibility and permanence.



Some Places Where Enameled Iron May Be Used to Advantage

Spandrels	Decorative Panels	Marquees and Canopies
Mullions and	Post Housings	Range and Laboratory
Pilasters	Panelling	Hoods
Mural Ornaments	Signs	Hospital Cabinets
Side Walls, exterior	Store Fronts	Mouldings
Side Walls, interior	Counters	Refrigerators
and ceiling	Display Cases	Sinks

Advantages of Porcelain Enameled Iron in Architectural Applications

● **Permanent Beauty**—The color range is unlimited. Practically any painting or design can be faithfully reproduced in all the original colors for decorative wall panels. Single sheets are made in sizes up to four by six feet, but when larger panels are required it is entirely practical to spread the design over two or more sheets which are later mounted together.

The metal being permanently and completely covered by the enamel cannot rust or corrode and is practically everlasting.

● **Economical Upkeep**—Porcelain enamel is absolutely permanent. Colors never fade even when exposed to the most severe conditions. There is no repainting as is the case with wood.

● **Simple and Easy to Clean**—Dust and grease do not adhere to the hard smooth surface so that cleaning is required but seldom. When it is necessary, simple washing with soap and water will restore the original beauty. No sand blasting or steam cleaning is required as with masonry.

● **Ease of Fabrication**—Porcelain enamel may be formed into practically any desired form. Fluted columns, embossed designs, formed mouldings, perforated grilles, crimped shapes are all readily formed with Toncan Iron Enameling Sheets.

● **Mat or Glazed Finish**—While the highly glazed finish is most common, porcelain enamel may be produced with a dull or mat finish which eliminates all glare. This finish is especially desirable in many exterior building applications.

● **Economical to Use**—Modern production methods, by reducing costs, make it feasible to use porcelain enamel in small modest buildings as well as in more elaborate structures.

● **Readily Available**—Competent enamellers are found in all larger cities. They will gladly consult with architects as to their requirements. Any Republic District office will furnish the names of concerns in your vicinity who will faithfully reproduce your designs.



Kinsel Drug Store, Detroit, Mich.
Architects—Pollmar, Ropes & Lundy
Enduro used for edging on Glasiron Macotta

Toncan Iron Enameling Sheets Meet the Modern Need

To meet the requirements of the modern applications of porcelain enamel as described above requires a high grade sheet.

The physical properties of the sheet are, of course, of an importance equal to its ability to accept a satisfactory coat of porcelain enamel, and the wide spread use of enameled products has involved some of the most difficult fabrication operations which are encountered anywhere in the use of sheet metal.

● TONCAN IRON ENAMELING STOCK

Experience of many years has demonstrated that open hearth irons are most suitable for porcelain enameling. Toncan Iron is one of the oldest open hearth irons in the market, having been produced for more than twenty-eight years.

Toncan Iron Enameling Sheets, therefore, combine the physical properties required for difficult fabrication and the ability to accept a high grade coat of porcelain enamel.

Toncan Iron Sheets, before and after enameling are unusually flat, free from waves and buckles and in addition have the highly desirable properties of an open hearth iron for enamel adherence and freedom from segregated impurities which might react with the porcelain enamel.

Constant research is conducted by Republic in an effort to keep Toncan Iron at all times suitable for all types of porcelain enamel. Close cooperation with the manufacturers of frits, as well as with those plants which produce their own frit, is in effect that we may work out with the enamer any problem in connection with the use of our product.

Erection and Forms of Porcelain Enamelled Iron

In the application of porcelain enamelled iron in the construction industry many novel methods and forms have been developed.

Sheets either plain or embossed may be applied by screws, bolts or nails to furring strips or other base. Several styles of clips have been developed to meet special conditions.

Mouldings drawn or rolled into any desired form are applied in a similar manner. Used in combination with sheets they cover the joints and screw heads.

Fluted sheets or columns are used for decoration and are usually applied by clips.



Haymarket Square Pedestrian Tunnel, Boston, Mass.

Designer—Boston Transit Co.

Toncan Iron Enameling Stock used for black and white porcelain enameled steel tile

"Glasiron Macotta" is a porcelain enameled shell with a backing of Haydite concrete. It is applied the same as masonry, or with tie clips as is brick veneer.

Enduro Stainless Steel may be used to advantage as a trim in combination with porcelain enameled iron, providing permanence and beauty.

Designing With Porcelain Enameled Iron

The architect will appreciate the many possibilities for unique and beautiful designs which are now offered by porcelain enameled iron. As has been mentioned previously the range of colors is practically unlimited

and, especially in the modernization of store fronts and restaurants, color is becoming increasingly important. With the use of porcelain enameled iron the design of the front may be attractively and effectively harmonized with the design of the signs as well as with the color and design of the interior.

By the use of fluted columns in color the effect of height may be obtained or mass may be emphasized. The design and the lighting of the front, the window and the interior may now be considered and treated as one problem and, by combining Enduro Stainless Steel and colored porcelain enameled iron unusually rich and individual results may be secured. For interior design porcelain enameled iron permits the architect to use color for wall decorations, counters, display cases and many other applications heretofore impractical because of material limitations.

Complete Engineering Service Available

REPUBLIC STEEL CORPORATION maintains a special engineering department devoted to the development and application of enameled iron. Republic specialists are always glad to assist architects in working out the best methods of producing their designs and applying them to the finished buildings.



Browning, King and Co., Brooklyn, N. Y.

Entire building sheathed with cream and mauve Toncan Iron Enameling Stock. The lettering on the building front is formed from mauve Toncan and the same is used to frame the store windows and entrances



Tennessee Enamel Mfg. Co., Nashville, Tenn.

The exterior is of green porcelain enamel panels on Toncan Iron Enameling Stock with Enduro Stainless Steel trim on joints which gives a highly decorative effect and insures maximum corrosion resistance

Republic Steel

C O R P O R A T I O N

GENERAL OFFICES . . . CLEVELAND, OHIO
CENTRAL ALLOY DIVISION . . . MASSILLON, OHIO

DISTRICT SALES OFFICES

BIRMINGHAM, ALA., Empire Bldg.	MILWAUKEE, WIS., First Wisconsin National Bank Bldg.
BOSTON, MASS., 250 Stuart St.	NEW YORK CITY, Chrysler Bldg.
BUFFALO, N. Y., Liberty Bank Bldg.	PHILADELPHIA, PA., Broad Street Station Bldg.
CHICAGO, ILL., McCormick Bldg.	PITTSBURGH, PA., Oliver Bldg.
CINCINNATI, OHIO, Carew Tower	ST. LOUIS, MO., Paul Brown Bldg.
CLEVELAND, OHIO, Republic Bldg.	SALT LAKE CITY, UTAH, Atlas Bldg.
DENVER, COLO., Continental Oil Bldg.	ST. PAUL, MINN., First National Bank Bldg.
DETROIT, MICH., Fisher Bldg.	SAN FRANCISCO, CALIF., Rialto Bldg.
GRAND RAPIDS, MICH., Grand Rapids Trust Bldg.	SEATTLE, WASH., White-Henry-Stuart Bldg.
HOUSTON, TEXAS, Gulf Bldg.	TOLEDO, OHIO, Ohio Bank Bldg.
INDIANAPOLIS, IND., Circle Tower	TULSA, OKLA., Thompson Bldg.
KANSAS CITY, MO., Dwight Bldg.	WASHINGTON, D. C., Shoreham Bldg.
LOS ANGELES, CALIF., Edison Bldg.	YOUNGSTOWN, OHIO, Republic Bldg.

EXPORT DEPARTMENT, Chrysler Bldg., NEW YORK CITY

Warehouse Stocks of Enduro Stainless Steel and Toncan Copper Molybdenum Iron are carried in Principal Cities. For Local Distribution contact the nearest Republic Sales Office.

Enduro Licensed under Chemical Foundation Patents Nos. 1316817 and 1339378



UNITED STATES STEEL CORPORATION SUBSIDIARIES

PRODUCERS OF

USS Stainless and Heat Resisting Steels

AMERICAN SHEET AND TIN PLATE COMPANY, Pittsburgh, Pa.
Sheets and Light Plates

AMERICAN STEEL & WIRE COMPANY, Chicago, Ill.
Cold Rolled Strip Steel, Wire and Wire Products

CARNEGIE-ILLINOIS STEEL CORPORATION
Pittsburgh, Pa. and Chicago, Ill.
Bars, Plates, Special and Semi-finished Products

NATIONAL TUBE COMPANY, Pittsburgh, Pa.
Pipe and Tubular Products

PACIFIC COAST DISTRIBUTORS, Columbia Steel Company, Russ Building, SAN FRANCISCO, CAL.
EXPORT DISTRIBUTORS, United States Steel Products Company, Hudson Terminal Building, NEW YORK, N. Y.

MODERN STEELS FOR MODERN USES



USS STAINLESS AND HEAT-RESISTING STEELS

Products

The four named subsidiary manufacturing companies of the United States Steel Corporation are producing a comprehensive line of Stainless and Heat-Resisting Steels, now available in the form of finished and semi-finished products in the field indicated for each company.



research departments, in addition to the Department of Research and Technology of UNITED STATES STEEL CORPORATION.

USS Chromium-Nickel Steels are produced under licenses of the Chemical Foundation, Inc., New York, N. Y., and of Fried. Krupp A. G. of Germany.

Description

These stainless steels, which are all of the relatively low carbon type, as distinct from the stainless cutlery grades, may be broadly classified under two main headings, as follows:

- (a) Chromium Steels (magnetic)
- (b) Chromium-Nickel Steels (non-magnetic)

In each of these classes there are obtainable a number of types and grades, differing in chemical composition, so that a selection may be made to meet the requirements in various specific applications.

Grades are as follows:

Chromium Steels—*Ferritic*. USS 12, USS 17, USS 27.

Chromium-Nickel Steels—*Austenitic*. USS 18-8, USS 18-8 Stabilized, USS 18-12, USS 19-9, USS 25-12, USS 25-20.

These Stainless Steels are recommended according as one or another of these metals is best suited to the specific requirements involved.

These steels have been carefully developed through the resources of these respective companies and their

For the Architectural Field

USS Stainless Steel 18-8 is particularly applicable to the architectural field, and offers wide applications, such as use in structural members and supports, hinges and hardware, decorative metal embellishments, spandrels, flat surface facings, mouldings, doors, grilles, panels, ornamental work, plumbing fittings, stoves and ranges, cabinets, kitchen equipment, utensils, and many like uses.

Various finishes are available from the dull to the highly polished providing a wide range of choice to blend with balance of environment.

Literature and Information

In addition to USS Stainless and Heat-Resisting Steel products, these subsidiary companies also manufacture full lines of standard steel products that are particularly adapted to the architectural and construction fields. Address the company producing the particular form of steel products in which you are interested. Literature and full information will be gladly given upon request.

ATLANTIC STEEL COMPANY

Hand Rail Sections of Basic Open Hearth Steel

ATLANTA, GEORGIA

The Company and the Product

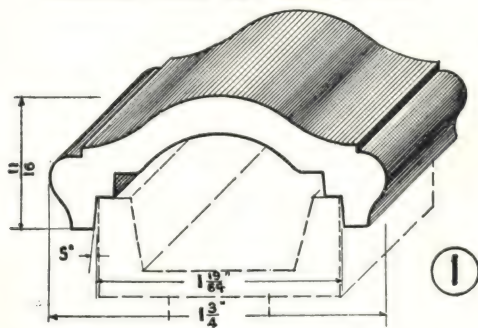
To supply the need for American-made steel Hand Rail Sections, the ATLANTIC STEEL COMPANY has designed the five popular sections shown in actual size below. Graceful curvature and symmetry of design characterize Dixisteel Hand Rail Sections, all five of which are available for prompt

DIXISTEEL
TRADE-MARK

shipment, in lengths of 20 feet, from large stocks at the mill. Hand samples are furnished, free of charge, upon request.

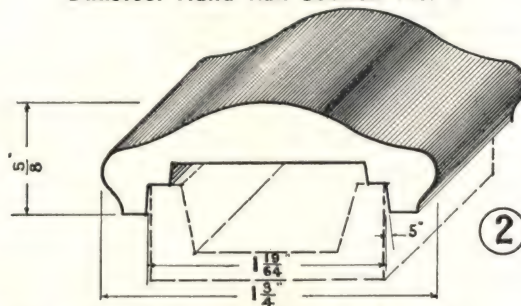
Specifications should be worded "Dixisteel Hand Rail Section No. —, made by ATLANTIC STEEL COMPANY, Atlanta, Georgia," so that fabricators will know exactly what to order from their sources of supply.

Dixisteel Hand Rail Section No. 1



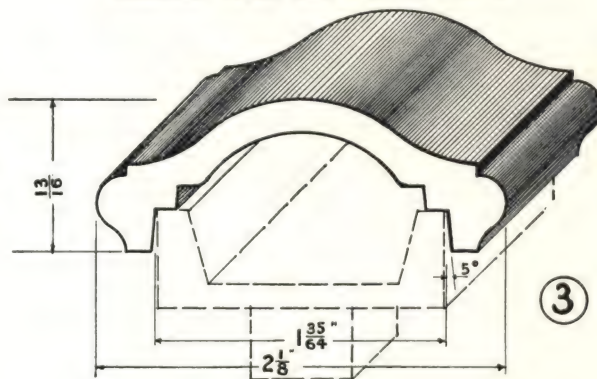
Dixisteel Hand Rail Section No. 1 weighs 1.5 pounds per lineal foot. The over-all height is $1\frac{1}{8}$ in. and the over-all width is $1\frac{3}{4}$ in. The double-cove construction permits the use of channels either 1 in. or $1\frac{1}{4}$ in. wide. No. 1 is our lightest-weight Hand Rail Section and its use materially reduces the total weight of the installation.

Dixisteel Hand Rail Section No. 2



Dixisteel Hand Rail Section No. 2 weighs 1.7 pounds per lineal foot. The over-all height is $\frac{5}{8}$ in. and the over-all width is $1\frac{3}{4}$ in. Because of the double-cove construction, channels either 1 in. or $1\frac{1}{4}$ in. wide can be used. No. 2 is a very popular Hand Rail Section. Of artistic design, its weight is not excessive, yet it has sufficient body to take unusually sharp turns without spreading and it forms a perfect union with the channel under all conditions.

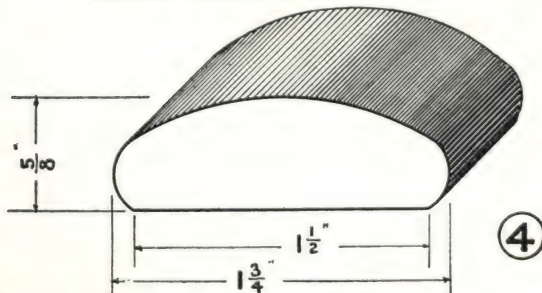
Dixisteel Hand Rail Section No. 3



Dixisteel Hand Rail Section No. 3 is the same shapely design as Section No. 1, but it is somewhat larger and proportionately heavier. It weighs 1.85 pounds per lineal foot.

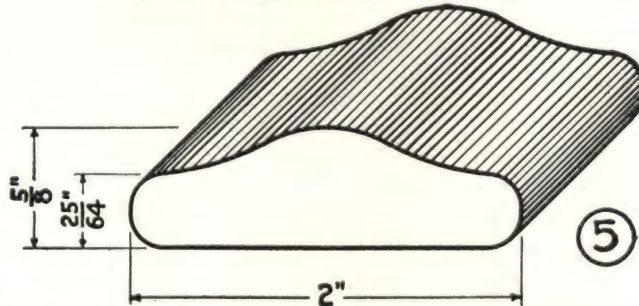
The over-all height of Section No. 3 is $1\frac{3}{8}$ in. and the over-all width is $2\frac{1}{8}$ in. Channels either $1\frac{1}{4}$ in. or $1\frac{1}{2}$ in. wide can be used because of the double-cove construction.

Dixisteel Hand Rail Section No. 4



Dixisteel Hand Rail Section No. 4 weighs 3.04 pounds per lineal foot. The over-all thickness is $\frac{5}{8}$ in. and the over-all width is $1\frac{3}{4}$ in. Section No. 4 meets the demand for a solid section of plain design. Government specifications frequently call for Section No. 4.

Dixisteel Hand Rail Section No. 5



Dixisteel Hand Rail Section No. 5 weighs 3.15 pounds per lineal foot. The over-all thickness is $\frac{5}{8}$ in. and the over-all width is 2 in. It is a solid section of shapely design, and is frequently specified on Government work.

ESTABLISHED 1911

ELLISON BRONZE COMPANY, INC.

JAMESTOWN, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

Ornamental bronze, aluminum, nickel silver, stainless steel and monel metal

ENTRANCE DOORS
STORE FRONTS
ELEVATOR FRONTS
BANK FIXTURES

MAUSOLEUM EQUIPMENT
TABLETS and SIGNS
BRONZE WINDOWS
SPECIAL HARDWARE

Literature gladly mailed on request.

Facilities

A most complete establishment devoted entirely to the manufacture of above mentioned products.

This thoroughly experienced organization offers personal supervision and expert engineering and manufacturing service.

Our factory includes modeling and pattern room, foundry, press room, machine shop, welding room, assembly department, chasing room, polishing and plating department, all using the best and latest equipment.



Bronze Doors, St. Peters Church, Albany, N. Y.
MARCUS T. REYNOLDS, Architect

A Few Typical Illustrations

BUILDING
Hume Mansur Building
Technical Data Building
Provident Institution for Savings
Department of Public Works
Atlantic National Bank
Baltimore Trust Building
Baltimore Life Insurance Company
Scottish Rite Temple
Penn. Power & Light Company
Women's World War Memorial
Chapel Georgetown Prep. School
Ind. & Mich. Elec. Co. Building
Scottish Rite Temple
Medical Arts Building
First National Bank Building

ARCHITECT
Vonnegut, Bohn & Mueller
Pretzinger & Pretzinger
James Purdon
Edward T. P. Graham
Thomas M. James Co.
Taylor & Fisher, Smith & May
Mottu & White
Friz & Friz
Helmle, Corbett & Harrison
Trowbridge & Livingston
Maginnis & Walsh
Austin & Shambleau
Keene & Simpson
M. Nirdlinger
Davis & Lewis

LOCATION
Indianapolis, Ind.
Wright Field, Ohio
Boston, Mass.
Boston, Mass.
Boston, Mass.
Baltimore, Md.
Baltimore, Md.
Baltimore, Md.
Allentown, Pa.
Washington, D. C.
Washington, D. C.
South Bend, Ind.
Kansas City, Mo.
Pittsburgh, Pa.
Scranton, Pa.

THE FLOUR CITY ORNAMENTAL IRON CO.

ESTABLISHED 1893

MINNEAPOLIS, MINNESOTA

REPRESENTATIVES

CHICAGO, ILL., S. I. Kaufman, 1912 Builders Building
 DETROIT, MICH., A. F. Saunders Co., 802 Owen Building
 CLEVELAND, OHIO, H. L. Walters, 1408 Standard Bank Building
 PHILADELPHIA, PA., F. J. Wilson Co., 12 So. 12th Street
 PITTSBURGH, PA., James Pitcairn Co., Century Building
 ST. LOUIS, MO., H. C. Uhlenhaut, Railway Exchange Building
 KANSAS CITY, MO., C. S. Hawley Co., 628 Dwight Street
 OMAHA, NEB., Consolidated Bldrs. Sup., 1002 No. 42nd Street
 LOS ANGELES, CALIF., Bradfield Bldg. Prod. Co., 4814 Loma Vista Avenue
 SAN FRANCISCO, CALIF., H. E. Root, 1864 California Street

DENVER, COLO., Geo. P. Heinze Co., 812 12th Street
 PORTLAND, ORE., McCracken-Ripley Co., 2221 Albina Avenue
 ATLANTA, GA., Hill R. Huffman (Route No. 3, Marietta, Ga.)
 NEW ORLEANS, LA., Nachary Bldrs. Sup. Co., 318 Carondelet Street
 FORT WORTH, TEX., Chas. F. Williams Co., 3320 W. 7th Street
 DES MOINES, IOWA, A. J. Crawford, 1418 34th Street
 DULUTH, MINN., Dunlop-Moore Co., 22 Third Avenue, W.
 HELENA, MONT., Raymond C. Grant, 634 Mound Street
 SEATTLE, WASH., F. T. Crowe Corp., 216 Walker Building
 WASHINGTON, D. C., Locke H. Trigg, 400 Cathedral Avenue

Products

ORNAMENTAL BRONZE, IRON, ALUMINUM, NICKEL
 SILVER, STAINLESS STEEL, MONEL METAL, BRASS and
 COPPER.

Store Fronts	Stairs and Railings
Entrance Frames and Doors	Grilles and Screens
Elevator Enclosures	Gates and Fences
Elevator Cars	Windows and Sash
Bank Screens	Tablets and Signs
Check Desks	Memorials and Statuary
	Marquise

Facilities

With a plant second to none in size, manned by a personnel of long experience, every step from preparation of details, patterns, models, casting, fitting, assembling and finishing, to erection and completion is handled by our own organization. Only by such unified effort can high standards be maintained.

Finishes

Suitable finishes for bronze have long been known and used, but iron has been merely a background for

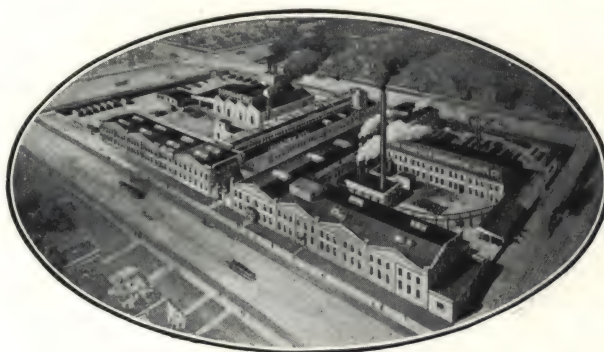
successive coats of paint to the detriment of its character as metal and the eventual obliteration of all ornament. To obviate this we have developed various finishes in oven baked enamels which, being thin and translucent, protect the surface without obscuring its metal character.

Special equipment for finishing the newer metals and alloys; nickel silver, monel metal, aluminum and stainless steel have also been provided. This equipment includes belts and wheels for polishing these metals and alloys, and vats, generators, etc., for deplating and aluminite finishes on aluminum.

Consultation

Proper choice of materials, and correct specifications and details, to develop advantages and avoid excessive cost imposed by limitations, is now especially important. We have long maintained a consultation service which, we believe, has been helpful. We solicit the opportunity to extend this service which should be of special value

at a time when the building dollar must yield maximum return.



References

From contracts in process or lately completed the following list is selected to indicate the character and scope of our activities.

BUILDINGS

Federal Office Building
 United States Courthouse
 Davison County Courthouse
 Maytag Office Building
 Jackson County Detention Home
 Blower Building, Easterly Sewage Treatment Plant
 Courtesy Building, Ford Motor Co.
 City Hall Building
 United States Court and Custom House
 Indiana World War Memorial
 Annex to Library of Congress

LOCATION

New York, N. Y.
 Austin, Tex.
 Mitchell, S. D.
 Newton, Iowa
 Kansas City, Mo.
 Cleveland, Ohio
 Dearborn, Mich.
 Sioux Falls, S. D.
 St. Louis, Mo.
 Indianapolis, Ind.
 Washington, D. C.

ARCHITECTS

Cross & Cross and Pennington, Lewis & Mills, Inc.
 Page Bros. and Kenneth Frankheim
 Floyd F. Kings and Walter J. Dixon
 Thielbar & Fugard
 Keene & Simpson and Edward F. Nield
 Small, Smith & Reeb
 Albert Kahn, Inc.
 Schwartz & Spitznagel
 Mauran, Russell & Crowell
 Walker & Weeks
 David Lynn, Pierson & Wilson and Alex Trowbridge

ESTABLISHED 1898

GARDEN CITY PLATING & MFG. CO.

Architectural Brass and Bronze, Metal Letter Signs, Adjustable Shelving Devices, Clothes Closet Hardware

1430 South Talman Avenue, CHICAGO, ILL.

NEW YORK OFFICE AND WAREHOUSE, 133 Wooster Street

REPRESENTATIVES IN PRINCIPAL CITIES

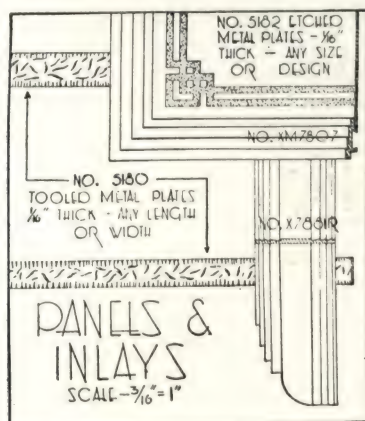
For our page on Lighting Reflectors and Built-in Lighting, see File Index

Other Products

Rollers and Track for sliding wood or glass doors; Keyhole Standards and Brackets for adjustable glass shelves; Metal Display Case Frames; Bank Counter



Screens; Ball Bearing Drawer Slides; Bar Hardware, Fittings and Metal Work; Showcase, Counter and Cabinet Hardware.



Decorative Metal Work

This company specializes in producing architectural metal work of every description in extruded, rolled, cast or wrought metal. "Garcy" designers have a veritable library of extruded shapes in brass, bronze, nickel silver or aluminum that have been released for general use and are consequently available for making up interior or exterior ornamental metal, bank counter screens, display case frames, railings, cornices, mouldings, etc.

Please refer to "Garcy" Bulletin 32-30 (A.I.A. File 15).



Feltman & Curme,
Louisville, Ky.
Koenigsberg &
Weisfeld,
Architects

Alphabet No. 1501
Letters 20 and
36 in. high

Alphabet No. 1504
Letters 20 in. high

Metal Letter Signs

A number of stock alphabets, such as the examples shown above, are available for interior or exterior use in aluminum, brass, bronze or nickel silver. "Garcy" Bulletin No. 34-70 (A.I.A. File 15) shows this line as well as metal show window valances, grab-push bars, ornamental metal and sign lighting equipment.



Hardware for Adjustable Shelving

Where Used—Wherever shelving can be used, "Garcy" Pilaster Strips and Adjustable Brackets provide easy and economical installation, and permit the utilization of space that is ordinarily wasted.

Features—Shelves are easily and quickly moved up or down. Brackets snap in and out easily, yet cannot be budged under a load. They are tested up to 600 lbs. The slots in pilaster strips are numbered, making it easy to line up shelves.

Sizes—No. K73 pilaster strip is 3/8 in. wide, with slots spaced for 1/2-in. adjustment; stock lengths are 3, 4, 6 and 12 ft.

Also available 7/8 in. wide for 1/4-in. adjustment; and 1 1/8 in. wide for 1/2-in. adjustment.

Free Samples—Samples will be sent on request.

"Garcy" Pullout Clothes Closet Garment Carriers

Service—To permit the construction of orderly and space saving wardrobes in homes, apartments, hotels, clubs, etc.

Construction Features—The carriers roll in and out smoothly and silently at a touch. They fasten with screws, either under the shelf or to the door casing and rear wall.

Finish—Standard finish is statuary bronze. Nickelplated or other finishes can be furnished.

Four Types—These carriers are made in four types, the No. 3410 being the lightest in construction for shallow closets and the No. 3430 the heaviest for deep closets. To be specified by number and sizes as follows:

No.	Sizes closed, in.	No.	Sizes closed, in.
3410	15, 16, 18, 20, 22, 24	3428	22, 24, 27, 30, 33
3402	27, 30	3430	30, 32, 36, 42, 48

GENERAL BRONZE CORPORATION

Distinctive Metal Work
LONG ISLAND CITY, N. Y.

WESTERN SALES OFFICE: 3849 West Lake Street, CHICAGO, ILL.

FACTORIES

LONG ISLAND CITY, N. Y.

CORONA, L. I., N. Y.

CHICAGO, ILL.

MILWAUKEE, WIS.

For General Bronze Revolving Doors, see File Index

ARCHITECTURAL AND ORNAMENTAL METAL WORK DOUBLE HUNG AND CASEMENT WINDOWS REVOLVING DOORS

All types of Architectural Ornamental Metal in aluminum, bronze, iron, monel, nickel.

A partial list of products includes:

Balustrades	Elevator Doors	Mausoleum Doors
Bank Screens	Entrances	Railings
Check Desks	Gates	Revolving Doors
Counter Screens	Grilles	Signs
Directory Boards	Lamp Standards	Store Fronts
Doors	Marquises	Tablets

Revolving Doors, Double Hung and Casement Windows

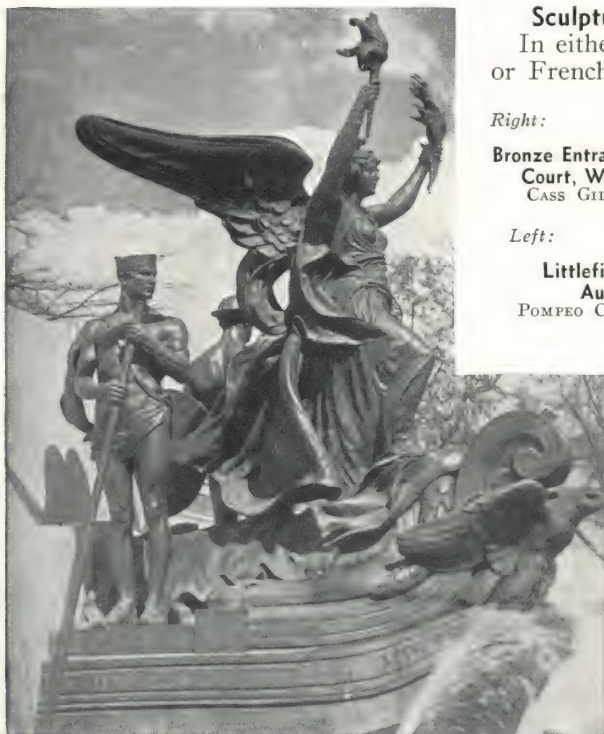
Manufactured under exclusive patents

Experience

For over forty years, GENERAL BRONZE CORPORATION and its predecessors have held a leading position in the fabricating of ornamental metals of the highest grade.

Engineering Service

Architects are free to call upon us for any assistance in the matter of design and construction. This service is available without obligation.



Sculptural Casting

In either the lost wax or French sand process.

Right:

Bronze Entrance, U. S. Supreme Court, Washington, D. C.
CASS GILBERT, Architect

Left:

Littlefield Memorial, Austin, Tex.
POMPEO COPPINI, Sculptor



Right:

Cast Bronze Memorial Erected at Gibraltar



THE GORHAM COMPANY

BRONZE DIVISION

PROVIDENCE, R. I.

SALES REPRESENTATIVES

CHICAGO, ILL.
CINCINNATI, OHIO

CLEVELAND, OHIO
JACKSONVILLE, FLA.

MINNEAPOLIS, MINN.
NEW YORK, N. Y.

PHILADELPHIA, PA.
PITTSBURGH, PA.

PROVIDENCE, R. I.
RICHMOND, VA.



Architectural Bronze

Architectural Bronze by GORHAM includes installations in the better type of commercial buildings as well as those of a memorial character. Our Design and Engineering Departments, with complete modern manufacturing facilities, enable us to fabricate and erect Architectural Bronze to meet the most exacting requirements. Budgets and estimates prepared without obligation.

Architectural Plastics

The development of cast moulds by GORHAM has opened up a new field of colorful decoration in ornamental plastic panels, grilles, plaques, medallions and mouldings of intricate design, heretofore prohibitive because of the cost of steel moulds. Investigate possibilities of this architectural medium.

Bronze Tablets

GORHAM Tablet craftsmanship blends the ideas and tastes of clients with the experience and technical knowledge of our tablet department. Cast, Sign Type, and Etched Tablets are created for Building Designations, Directional Purposes, Trophies and Memorials. Illustrated literature is available showing tablets for use in churches, hospitals, schools, public buildings, fraternal organizations, historical events, and for display purposes. Detailed designs and estimates furnished.

Bronze Grave Markers

It is customary to mark graves in non-monumental sections of cemeteries with Bronze Markers on granite bases. Illustrations of the complete line of GORHAM designed Bronze Markers and Vases sent on request.

Sculptural Bronze

For many years GORHAM Foundries have collaborated with prominent sculptors to produce objects of art in bronze. This work embraces Garden Sculpture (sundials, fountains and decorative pieces), Commemorative

Memorials, Portrait Tablets and Gift Bronzes. Estimates furnished on request.

Bronze Mausoleum Doors

GORHAM Cast or Built-up Bronze Mausoleum Doors, Windows, Grilles and Rosettes are found in the foremost mausoleums of this country. The GORHAM Standardized Cast Mausoleum Door with interchangeable grilles, handles and ornament permit a varied design, individuality and distinction. Finely sculptured detail and hand-modeled textured surfaces are secured at low cost, without sacrificing quality. Write for illustrated literature, details and prices.

Gorham Cremation Urns

GORHAM Cremation Urns embody dignity of design, sculptural finish, eternalock device, and attractive interior lining, as the result of years of study in urn requirements and manufacture. Inexpensive niche cabinets and urn units with bronze grille front are recommended to take care of the problem of the storage of ashes. These cabinets are built in units of twenty or more and used for low-priced niche and urn sales, for storage and rental purposes. Write for literature.

Industrial Plastics

GORHAM low-cost sample and production moulds are used in plastic moulding of novelties and premium products, packaging and displays, and in various fabricated parts, where intricate ornamental design is required. Estimates furnished on request.

Industrial Castings

GORHAM has facilities for the production of fine castings in nonferrous alloys in cases where surface ornamentation or a fine "as cast" texture are important. Some applications are: permanent moulds for zinc and lead alloys, master patterns for cast plastics, moulds and master patterns for brocading and engraving machines. Send specifications for prices.

LOGAN CO.

Ornamental Iron and Wire Work

209 North Buchanan Street, LOUISVILLE, KY.

REPRESENTATIVES IN PRINCIPAL CITIES

Products

ORNAMENTAL IRON WORK, including Cast Iron Fronts, Iron Gates, Railings, Steel Stairs, Fire Escapes, Marquises, Grille Work, Iron Fencing and Gratings.

WIRE WORK, including Guards, Gates, Partitions and Railings.



Trade-Mark

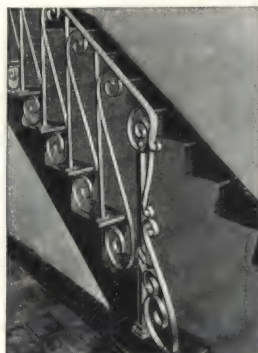
Service

A long-established firm with a modern plant equipped to execute contracts in a prompt, efficient, and accurate manner. Skilled erection crews.

Separate catalogues on different items furnished on request. Advise as to requirements.



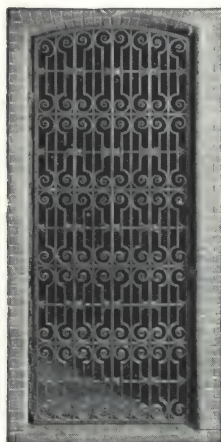
Bank and Office Cage



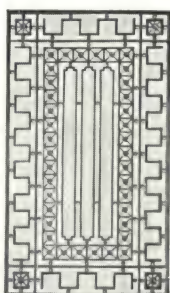
Iron Stair Railing



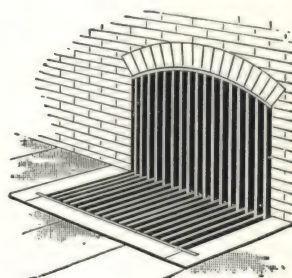
Steel Stairs



Gate in Archway of School Building



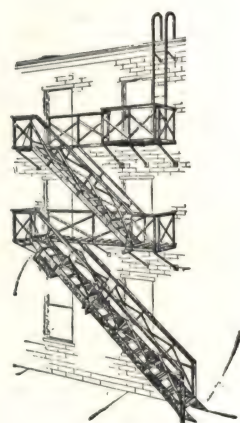
Ornamental Grille



Sidewalk Grating



Spiral Stair



Fire Escape



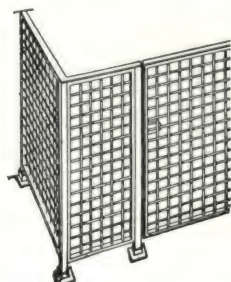
Ornamental Metal Work



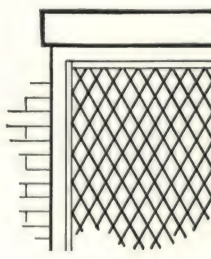
Metal Railing



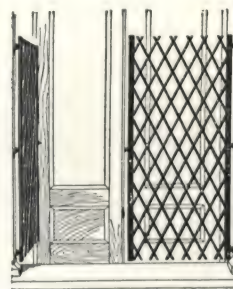
Open Mesh Partition



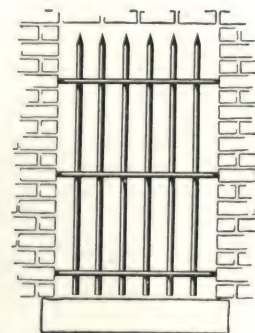
Bank and Office Cage



Wire Guard



Folding Gate



Iron Window Guard

Pipe Railings

Made up either level or for stairs—of steel pipe or brass tubing.

Logan Spiral Slide Fire Escapes

Drawing and specification shown in another section. See File Index.

MAUL MACOTTA CORPORATION

Manufacturer of Porcelain and Metal Covered Concrete Building Units

1640 EAST HANCOCK AVENUE

TELEPHONE: TEMPLE 2-5626

DETROIT, MICHIGAN

REPRESENTATIVES

NEW YORK, N. Y., Fredenburg & Lounsbury, 101 Park Avenue
PHILADELPHIA, PA., Lea, Peters & Company, 1810 Architects Building
BOSTON, MASS., Consolidated Brick Sales Inc., 121 Chandler Street
ST. LOUIS, MO., Frauenfelder & Turner, 5300 McKissock Avenue
BALTIMORE, MD., Paul Klaesius, 12 W. Madison Avenue
KANSAS CITY, MO., O. H. Hodson, 6019 Cherry Street
MILWAUKEE, WIS., Tews Lime & Cement Co., 1136 E. North Avenue
TORONTO, CAN., The Cooksville Co., 672 Dupont Street

CHICAGO, ILL., Nelson A. Friis, 7250 Yates Avenue
PITTSBURGH, PA., Joseph B. Shaw, 1912 Farmers Bank Building
BUFFALO, N. Y., John H. Black Company, 505 Delaware Avenue
INDIANAPOLIS, IND., Spickelmier Fuel & Supply Co., 1080 E. 52nd Street
CINCINNATI, OHIO, Builders Material Co., Cardiff Ave. & B. & O. R. R.
DAVENPORT, IOWA, Cement Products Company, 715 E. River Street
DAYTON, OHIO, Crume Brick Company, Dayton Industries Bldg.

PRODUCTS:

ARCHITECTURAL PORCELAIN MACOTTA

STAINLESS STEEL MACOTTA

METALIZED MACOTTA

PORCELAIN CAST IRON MACOTTA

Macotta in its various applications is a product of MAUL MACOTTA CORPORATION. Macotta is the only permanent building unit available to the architect which incorporates a true porcelain enamel, or metal facing into a load-bearing masonry building material. Macotta, being a masonry unit, is actually incorporated into the structure on which it is used, differing in this respect from thin applied facing materials.

General use has been made of this colorful product for modern new building purposes and it is particularly adaptable for the modernizing of structures such as store and shop fronts, theater façades, and like projects. Macotta offers to the architect for the first time a substantial masonry unit, through the use of which he can express color originality, in mass and line without limit. Scarlet, emerald green, royal blue . . . as well as softer pastel shades of ivory, cream and pale orchid are all available in addition to, or in combination with, the newer metals . . . stainless steel, aluminum and others.

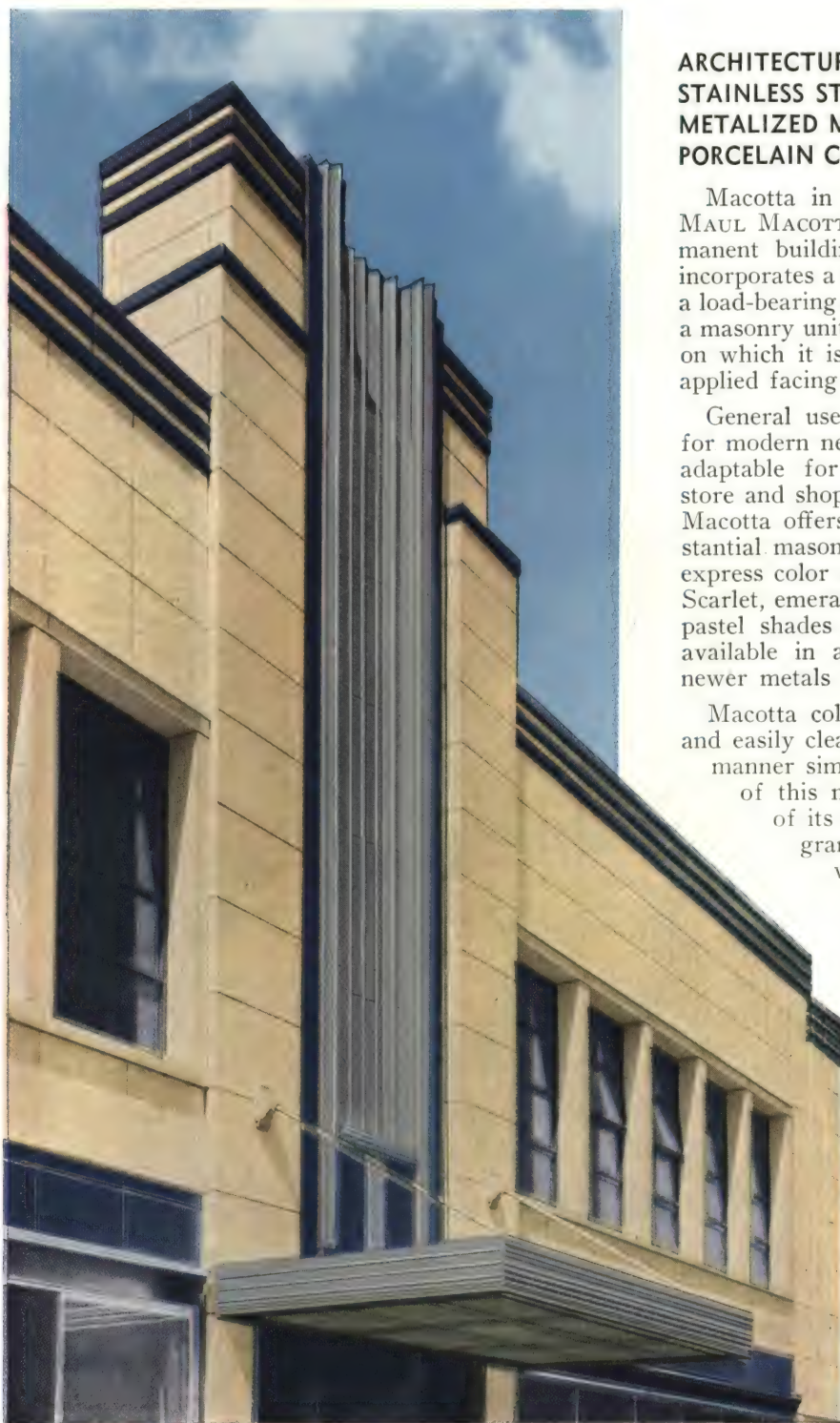
Macotta colors are permanent. They are acid-proof and easily cleaned. Macotta is jointed and erected in a manner similar to ordinary stone work. Popular use of this new and smart building material is proof of its favorable position in today's building program. It offers the architect a versatile medium with which he can achieve new heights of beauty. Macotta has a definite place in modern building art.

Under normal conditions, shipments of finished Macotta units can be expected within two weeks after receipt at the Macotta factory of approved plans and color samples.

Macotta process, delivery and erection servicing are of real value to the architect, and greatly assist in the speedy completion of any job where Macotta is utilized as the motif of modern color and decoration.

Madison Gardens Roller Rink, Detroit, Mich.

Ashlar units of Cream Porcelain Macotta; trim of Dark Blue Porcelain Macotta; niche over marquee of Stainless Steel Macotta
SMITH, HINCHMAN & GRYLLS, Architects, Detroit





THE COLORFUL MODERN BUILDING UNIT

THE facing of Porcelain Macotta is of Pemco stainless architectural porcelain fused on steel. The steel used in this base is the finest grade specially prepared enameling stock varying from 16 to 20-gauge depending on the size unit required.

The enamel facings are securely anchored to concrete backing by a patented process. Narrow steel edgings, also anchored in the concrete are usually added to all exposed edges, lending distinctive beauty and protection to the finished product.

Architectural Porcelain Macotta is acid-proof, and age-proof . . . impervious to moisture, unaffected by drastic temperature change . . . will not crack, craze, or lose its lustre. It has a high resistance to physical impact. Macotta is easily cleaned . . . only soap and water is required to preserve indefinitely its original cleanliness and beauty of color.

An Age of Color

This is an age of color . . . the architect demands color . . . in Macotta it has been achieved successfully; in durable, permanent form. Almost every tone and variation in the color scale can be produced with fidelity through the use of Porcelain Macotta. This versatile medium offers a stimulating field for architectural ingenuity, as Macotta units are not limited to single colors. By means of stencils, additional colors in living, vibrant patterns are achieved in either matt or gloss finish, or in combinations of the two.

Haydite Used for Concrete Backing of Macotta

Haydite concrete forms the backing of all Macotta units, to which the porcelain enameled metal is securely anchored, thereby in effect, becoming one solid fire-resisting masonry unit. Haydite being a burned shale of cellular construction, produces concrete 33% less in weight than with ordinary aggregates.

It also serves as an efficient insulator, minimizing heat losses through the walls. It is low in absorption, devoid of capillary attraction and thus eliminates condensation.

National Board of Underwriters' tests have conclusively established the fire-resisting qualities of Haydite concrete, and it complies with all the requirements of state and local building codes. Macotta units are fabricated from 1 in. to any

required thickness. They can be used as solid wall units, the inner side being a perfect base for plaster. Units are placed in masonry in a manner similar to stone and receive the dead and live building loads, and in general serve all the normal functions of ordinary masonry.

Macotta weighs approximately 100 lb. per cu. ft. as against 145-150 lb. for stone, thus, sometimes effecting savings in structural costs. Macotta surface area limitations are about 20 sq. ft. per unit. Metal ties are incorporated in the Macotta for anchorage and larger units have steel lifting hooks to facilitate handling. Macotta can be drilled for sign or other attachments either at the plant or on the job by following manufacturer's instructions. Units of Macotta are fabricated according to architect's drawings and are adaptable to all ordinary masonry functions, for spandrels, copings, frieze courses, or entire wall surfaces.

Stainless Steel Macotta

Stainless Steel Macotta is of Chrome-nickel (18-8) sheet steel, formed to the required design and firmly anchored in concrete. Other metals are used in like manner . . . bronze, Dirigold, etc. Stainless Steel Macotta is used for base courses, wall copings, sills, lintels, mullions, pilasters and spandrels. Striking color effects are obtainable when used in conjunction with Porcelain Macotta. Through the use of Stainless Steel Macotta entire wall surfaces may be successfully covered without the usual difficulties experienced in sheet metal construction, and giving the effect of solidity, associated only with masonry surfaces.

Metalized Macotta

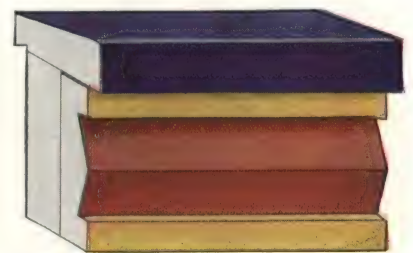
Metalized Macotta is formed of a light weight concrete base, the face of which is surfaced with molten metal. It is available in the non-ferrous metals such as copper, brass, bronze, lead, nickel-silver, tin, or the various alloys in vogue at present,

and from which a variety of metal surfaces may be obtained. It is used for exteriors, as well as interiors, and weathers beautifully, assuming in time, a rich soft patina associated only with the solid metals. It is placed and erected in the same manner as other Macotta units. It is particularly adapted to deep relief ornamentation and is commonly used for ornamental spandrels.



Metalized Macotta Spandrel in Copper Finish,
New Center Building, Detroit, Mich.

ALBERT KAHN, INC., Architects



MACOTTA SPECIFICATIONS

General—The Macotta manufacturer and the erection contractor shall be governed by the "General Conditions of the Contract" of the American Institute of Architects. (Fourth edition, 1925).

Work Included—This specification covers all labor, materials and services incidental to, and including the furnishing and erecting of all Macotta as indicated on the drawings and specified herein.

Division of Work—The Macotta manufacturer shall furnish all Macotta required by this specification.

Drawings and Details—Scale and detail drawings shall be furnished where necessary by the architect and shall be accurately conformed to in the execution of the work.

The manufacturer shall prepare complete shop drawings for all Macotta, showing sizes, sections, and dimensions of pieces, jointing, bonding, anchoring and all other necessary details. Each piece of Macotta shall have a setting number.

Copies of all shop drawings shall be submitted to the Architect and one set approved by him in writing thereon and returned to the manufacturer, before the fabrication of Macotta is commenced.

The general contractor shall furnish to the manufacturer of the Macotta all drawings, details and information necessary to enable said manufacturer to properly check the Macotta with connecting structural work or other work in conjunction with the Macotta.

The Macotta shall be provided with setting loops or lifting hooks, where necessary for setting purposes.

Quality of Macotta—All Macotta shall be manufactured according to standard Macotta practice.

The Macotta concrete shall be made with Haydite lightweight aggregate and shall be sufficiently strong to properly support all structural loads. Reinforcing must be provided where required.

All joint surfaces of each unit shall be treated with Dehydratine No. 3 or R. I. W.

Color and Finish—The surface shall be of metal, or finish, as approved by the architect and represented by the approved sample on file. The following symbols marked on the architect's drawings shall designate the type of Macotta required:

"S. S" Macotta—Face of stainless steel containing 18% chromium, and 8% nickel, Macotta units that are within 8 ft. 0 in. of the grade line height such as bases, show window courses and entrances shall be of 20 gauge Stainless Steel facing, work above this point shall be of 24 gauge Stainless Steel facing. It is preferable to use No. 6 Tampico brush finish for exterior use as this finish has the least reflectivity.

"C" Macotta—Designates Macotta with a face of porcelain enamel fused on rust-resisting enameling stock. Where only one color is required on a single unit the drawing symbol will be "C" Macotta, where two or more colors are required on a single unit, the symbol will have a numerical prefix to indicate the number of colors on said unit—such as "2-C Macotta." Edging—plain units are to have stainless steel edgings, unless stipulated otherwise. Units are available with edging horizontally and plain edge vertically, or vice versa.

"M" Macotta—Designates metalized concrete and is generally used where relief ornament is required. This is available in bronze, brass, copper, lead, tin, aluminum, Dirigold and other non-ferrous metals.

"C. I" Macotta—Is Macotta with relief features carried out in architectural porcelain enamel on cast iron, available in required design and color combinations.

Cleaning, Setting, and Pointing—The erection contractor shall unload, receipt for, and protect and erect all Macotta covered by this specification and shall provide and install all necessary anchors.

The stone setters shall set the Macotta in accordance with the requirements of the Macotta shop drawings as approved by the architects.

All Macotta shall be set in mortar composed of one volume of Portland cement, one-half volume of cold lime putty, and four and one-half volumes of damp loose mortar sand. The mortar sand shall be fine torpedo sand. Lime putty shall be made from hydrated lime soaked in water

A typical example of what can be accomplished by the use of Macotta. In the circle—Empire Building, Detroit, before treatment. Below—the same building, its first floor modernized with a handsome Jade Green Macotta, and trimmed in Stainless Steel Macotta.

C. HOWARD, CRANE, Architect, Detroit



at least 24 hours before using. The mortar shall be mixed in small batches just prior to its use for setting the Macotta.

The mortar surfaces of each unit shall be sponged with clean water just before setting. The use of pinch-bars, except on unexposed surfaces is strictly prohibited. Each unit shall be set accurately, true to line, level and plumb, by competent stone setters, with full flushed joints. The joints shall be $\frac{3}{16}$ in. and shall be raked out $\frac{3}{4}$ in. for pointing.

Each unit of Macotta, except where otherwise specified, shall rest on a full bed of mortar, in sufficient amount to fill out to the edges of the unit on all sides. Each unit shall be adjusted on its bed by pressing in place or striking with a wooden mallet or ram. Any unit which does not find its proper bed and accurate bearing, shall be lifted and re-set on a new bed of mortar. Whenever necessary, the setter shall "Humor" the unit to obtain the best possible result.

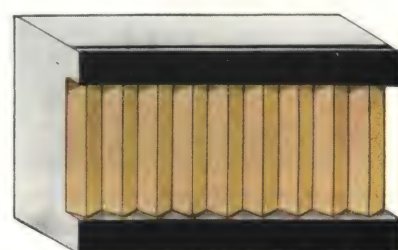
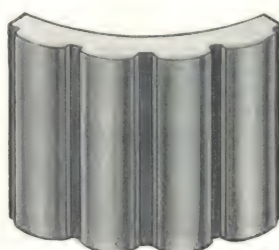
All anchors, dowels, bolts, etc., unless incorporated in the Macotta, shall be furnished by the setter, as required by the drawings hereinbefore mentioned.

When the stainless steel Macotta is in place, the protecting paper on the face thereof, shall be soaked, and washed off with clean warm water. STEEL WOOL, METAL SCRAPERS, OR ANY OTHER MECHANICAL METHOD SHALL NOT BE USED IN CLEANING THE STAINLESS STEEL MACOTTA, as scratching and contamination of the surface are almost certain to result. After the paper has been removed, the Stainless Steel Macotta shall be cleaned and polished with FFF Italian pumice. This powder shall be applied with a damp cloth, allowed to dry and then wiped off with a soft woolen cloth. In applying and cleaning off the powder, always rub in the direction of the polishing lines—never with a circular motion or across the grain of the metal.

The Macotta shall be cleaned only with clean water and soap powder, or a cleaning powder prepared for this purpose. Information on the latter will be provided on request.

Before pointing, all face joints shall be cleaned by brushing or blowing with a bellows, to remove deposited grime and dirt. The face joints shall then be carefully and neatly pointed to a depth of $\frac{3}{4}$ in., and to the architect's satisfaction. The pointing material shall be an approved caulking compound of color selected by the architect. This material shall be packed solidly into the joints with a gun completely filling them.

When called for on the approved Macotta shop drawings, expansion joints shall be provided. No setting mortar shall be used for such joints. The entire joint shall be filled with the caulking compound of the type hereinbefore mentioned.



PORCELAIN ENAMELLED CAST IRON MACOTTA

One of the most strikingly effective developments of the Macotta process is that of relief ornamentation carried out in architectural porcelain enamel. The relief features are of porcelain cast iron Macotta, in any design and color combination desired.

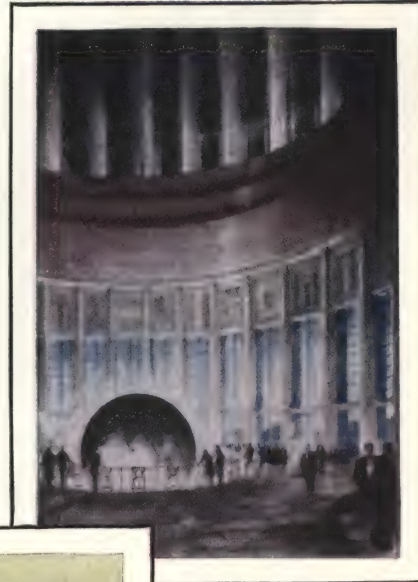
Seven panels similar to the one pictured herewith, have been placed in the new Ford Rotunda building at Dearborn, Michigan. The two largest representing "Progress" and "Industry" over the south and north doors respectively, and five others symbolic of Thrift, Safety, Power, Beauty, and Speed, form a simple and impressive decorative motif over the main entrance.

The arresting beauty of these cast figures in oyster-white porcelain enamel Macotta against a background of matt blue Macotta, form, with the Stainless Steel entrance columns a magnificent study in modern simplicity, enhancing the natural beauty of the wall masses.

The court rotunda is surrounded by a peristyle of thirty-two imposing columns of stainless steel Macotta. These columns, each forty-five feet in height, command attention by the beauty of their classic simplicity. Structurally, they are built up of nine individual sections, each five feet in height and securely anchored to the structural steel supporting members.

MACOTTA

TRADE MARK REGISTERED



Pittsburgh, Pa., Spear Store Building, 911 Penn Avenue, Hannah & Sterling, Architects.
Camden, N. J., Savar Theater, W. H. Lee, Philadelphia, Architect; Green & McNelly, Associates.
Providence, R. I., Esso Super-Service Station, South & Francis Streets, Colonial Beacon Oil Co.
Brookline, Mass., Esso Super-Service Station, Hammond & Boylston Streets, Colonial Beacon Oil Co.
Cincinnati, Ohio, Neisner Bros. Store, Race Street & Opera Place, Neisner Bros. Architectural Dept., Architects.
Cleveland, Ohio, Republic Building, 643 Euclid Avenue, Walker & Weeks, Architects.
Indianapolis, Ind., Shapero Store Building, 808 Meridian Street
Louisville, Ky., S. S. Kresge Store Building, 474 South Fourth Street, Kresge Architectural Dept., Architects.
St. Louis, Mo., Andrew Sansone Store, Rosedale & Delmar Avenues, Alfred J. Johnson, Architect.

REPRESENTATIVE MACOTTA INSTALLATIONS

NEW YORK

Loeser Store, 227-243 Schermerhorn Street at Brooklyn Subway, Slee & Bryson, Architects
640 Madison Avenue Building, Henry C. Pelton, Architect.
Store Building, Chrysler Building Corp., 145 E. 42nd Street, Harry R. Allen, Architect.
Syracuse Lighting Co., Office Building, Syracuse, N. Y., Bly & Lyman, Architects.
Esso Super-Service Station, Albany, N. Y., for Colonial Beacon Oil Co.
Esso Super-Service Station, North Street & Van Raken Avenue, Schenectady, N. Y.

CHICAGO

Mode Theater, 3914 Sheridan Road, B. Leo Steif & Co., Architects.
Beverly Theater, 95th Street & Ashland Avenue, Ronald E. Perry, Architect.
Amalgamated Trust Building, Monroe & Dearborn Streets, Holabird & Root, Architects.
Avon Theater, 5935 Roosevelt Road, B. Leo Steif & Co., Architects.
Neisner Bros., Store, Roosevelt Road & Turner Avenue, Neisner Bros. Architectural Dept., Architects.

DETROIT

Chrysler Corporation, Display Building, East Jefferson Avenue, Albert Kahn, Inc., Architects.
Chrysler Corporation, Sales Building, Woodward Avenue at Antoinette, Marcus R. Burrowes, Architect.
Richman Brothers Store, Woodward at Clifford, Albert Kahn Inc., Architects.
Shrine of the Little Flower, Royal Oak, Henry J. McGill, Architect.
Tower Theater, Grand River & Steel Avenues, Arthur K. Hyde, Architect.
Irving Shop, 1530 Washington Boulevard, I. M. Lewis, Architect.
Kahn Realty Corp. Building, Woodward & Warren Avenues, Albert Kahn Inc., Architects.
Home Furniture Co., 321 Michigan Avenue, Gordon R. Walper, Architect.
W.J.R. Transmitting Station, Sibley & Butler Roads, Cyril E. Schley, Architect.
Sanders, Richards Market, & Kinsel Drug Co., store group, Gratiot & 6 Mile Road, Pollmar, Ropes & Lundy, Architects.



South Entrance, Rotunda Building, Ford Motor Company, Dearborn, Mich.
ALBERT KAHN INC., Architects, Detroit

MACOTTA INSTALLATIONS

The buildings represented below are but a few of the many located in all sections of the country.



Block & Kuhl Building, Decatur, Ill.

Left:
Before remodeling

Below:
After remodeling with Architectural Porcelain Macotta in striking tones of Orange, Brown and Black

ASCHAUER AND WAGGONER, Architects



Majestic Theater, Detroit, Mich.

Below:
Before remodeling

Left:
The facade of the same theater after treatment with Porcelain Enamel Macotta.



Sanders Store, Detroit, Mich.

13571 Gratiot Avenue, an outstanding example of ultra smart modern treatment with Macotta. Carried out Matt Black with Cream Porcelain Macotta. Pollmar, Ropes & Lundy, Architects



Mode Theater, Chicago, Ill.

Above:
The building under its old name, and before remodeling

Right:
The tower of Cream Porcelain Macotta, lobby of black and maroon Macotta, the trim and belt courses of combination Black Porcelain and Stainless Steel Macotta

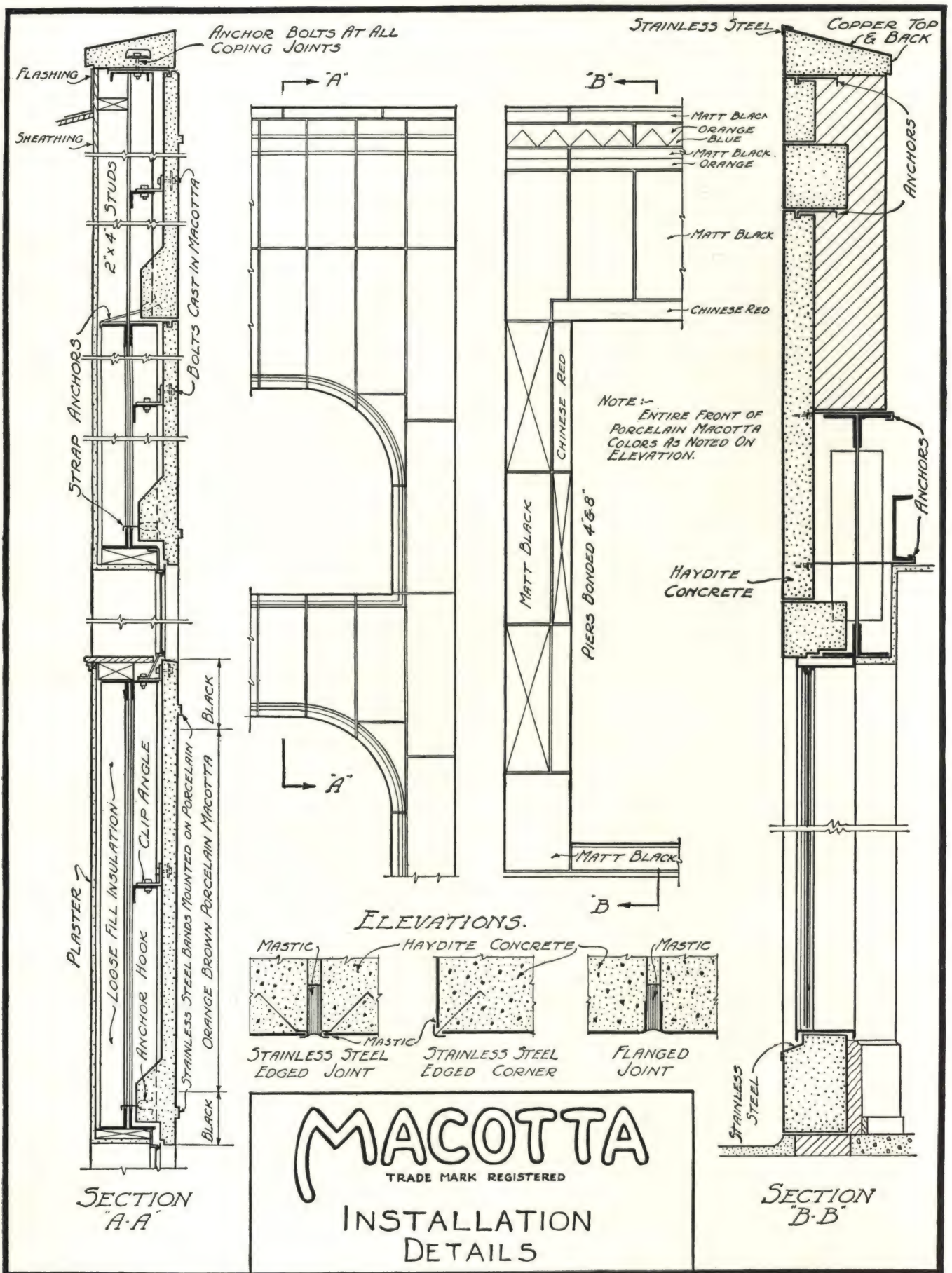
B. LEO STEIF & Co., Architects



General Tire Co., New York, N. Y.

602 West 57th Street—Lower base course in black, remainder of building in dark blue and slate grey Porcelain Macotta with stencil frieze at top and the pilasters in golden yellow

FRANCISCO & JACOBUS, Architects



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FLAGPOLE BASES

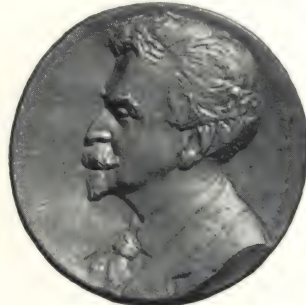
GATES
GRILLES
LAMPS and
STANDARDS
LECTERNS
LETTERS
MARQUISES

MAUSOLEUM
DOORS
SANCTUARY
RAILINGS
BAS-RELIEFS
STORE FRONTS
WINDOWS



9-ft. Bronze Memorial Flag Pole
Base, Tryon Park, New York,
N. Y.

OLMSTED BROTHERS, SC.



Bronze Medallion

RAYMOND A. PORTER, SC.

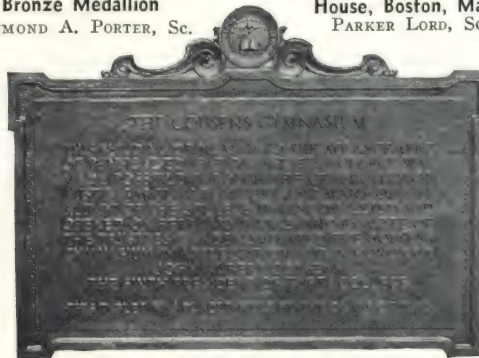


Bronze Bust Placed at State
House, Boston, Mass.

PARKER LORD, SC.



Bronze Rubrical Tabernacle, at
St. Joseph's Church,
Pascoag, R. I.



Placed at Tufts College, Mass.

ANDREWS, JONES BISCOE & WHITMORE, Architects



Eaton Memorial, Andover,
Mass.



Bronze Statuette of
St. Francis Assisi
EARNEST PELLEGRINI, SC.



Bronze Mausoleum Door, Falmouth,
Mass.

COOLIDGE, SHEPLEY, BULFINCH &
ABBOTT, Architects



Bronze Grille Doors, American Canado
Building, Manchester, N. H.



12-ft. Statue of Lin-
coln, Springfield, Ill.
ANDREW O'CONNOR, SC.

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U. S. Parcel Post Building, Cincinnati, Ohio.
U. S. Archives Building, Washington, D. C.
U. S. Labor Department Buildings, Washington, D. C.
Ball State Teachers' College, Muncie, Ind.



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CROWE & SCHULTE, Architects



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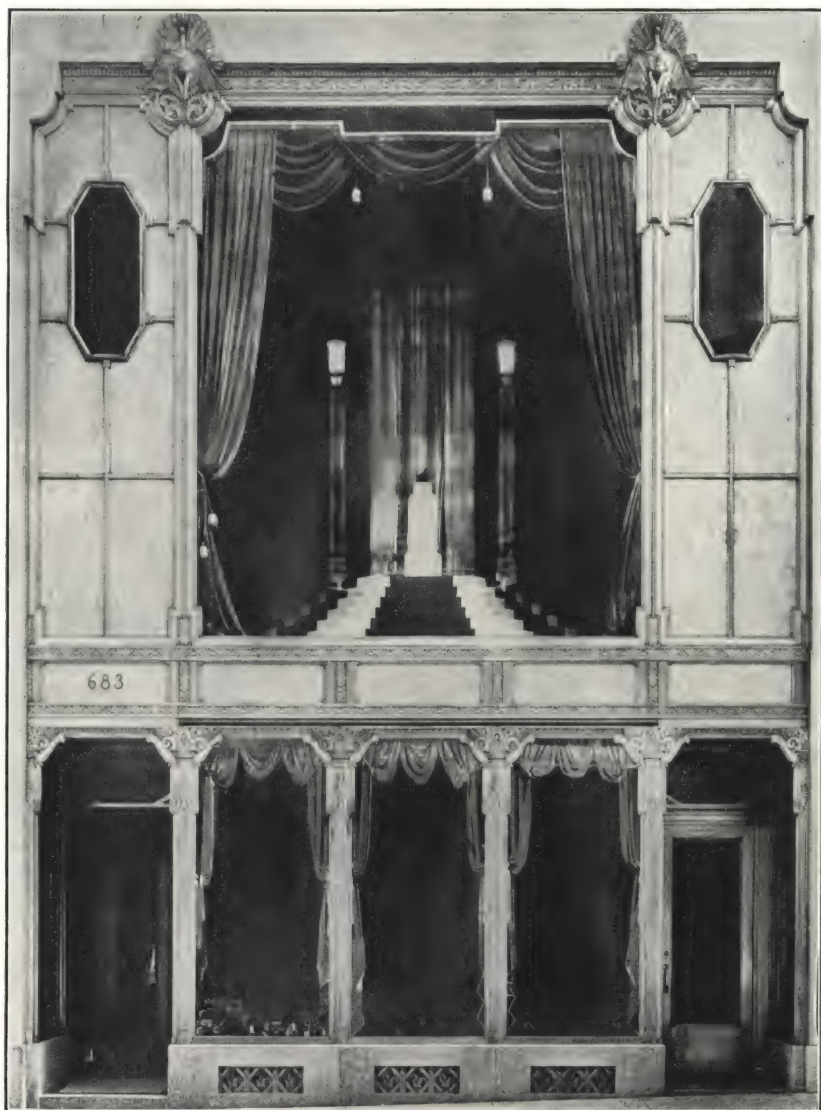
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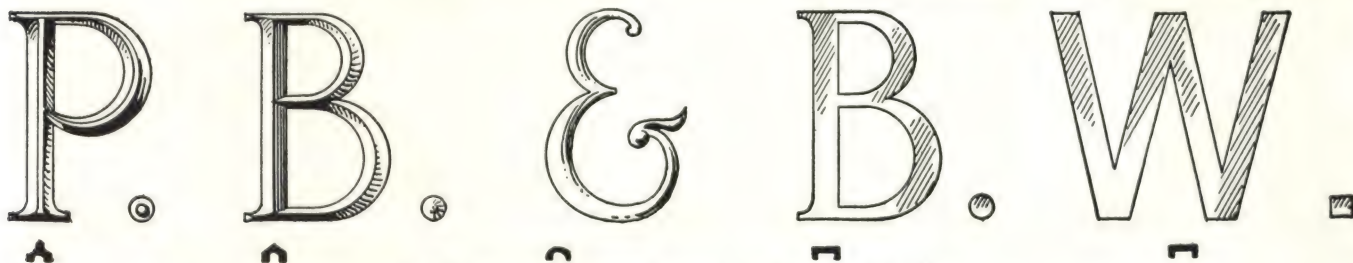
Dorothy Gray Building, 683 Fifth Ave., New York, N. Y.
Kohn & Butler, Architects



Bronze Casement and Windows in Hotel, Philadelphia



Section of Banking Screen and Gate



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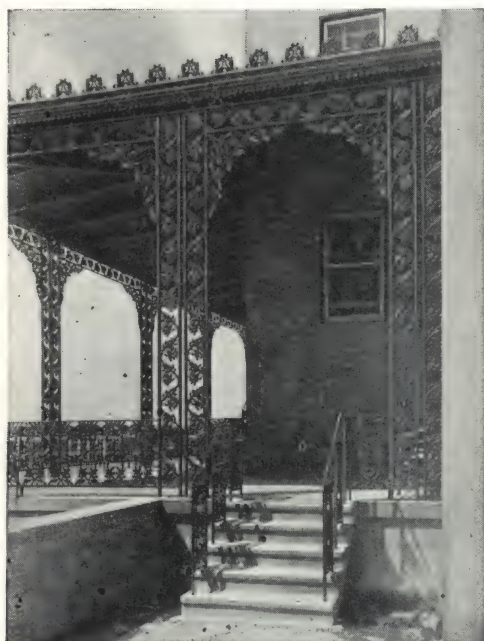
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CLINTON MACKENZIE, Architect

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MELLOR, MEIGS & HOWE, Architects

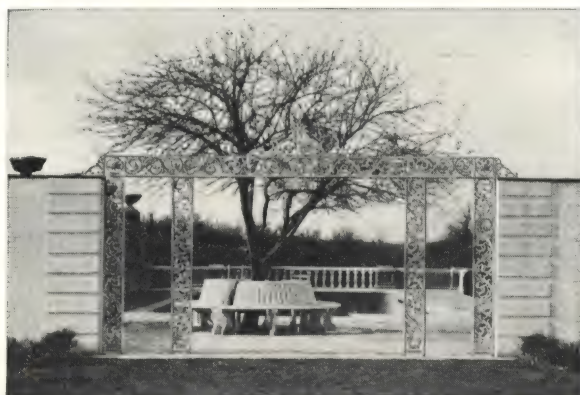
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BRADLEY DELEHANTY, Architect



WYETH & KING, Architects



BRANDON SMITH, Architect



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CHARLES F. RABENOLD, Architect

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See catalog for details



SHEPARD & STEARNS, Architects

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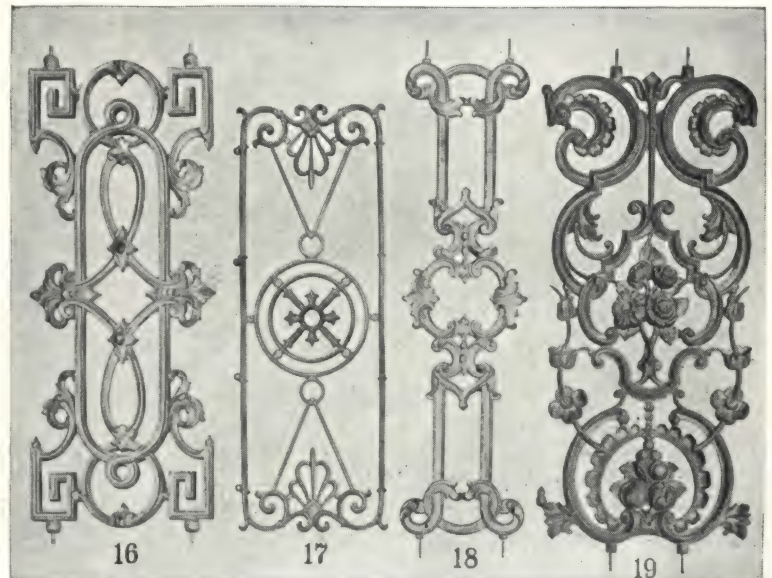
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18	2' 5¼"	8"	9 "	DF
19	2' 6"	13¾"	13 "	SBO

Key—"SBO" Single faced backed out. "DF" Double faced.



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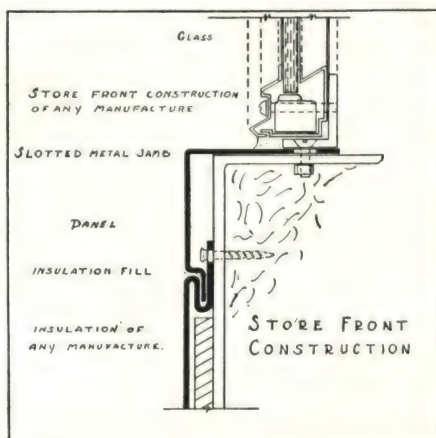
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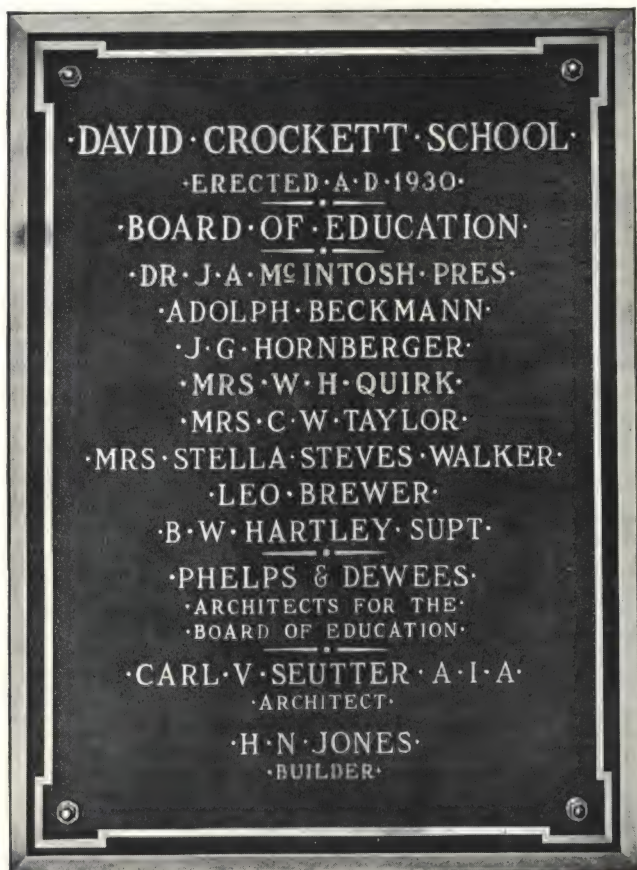
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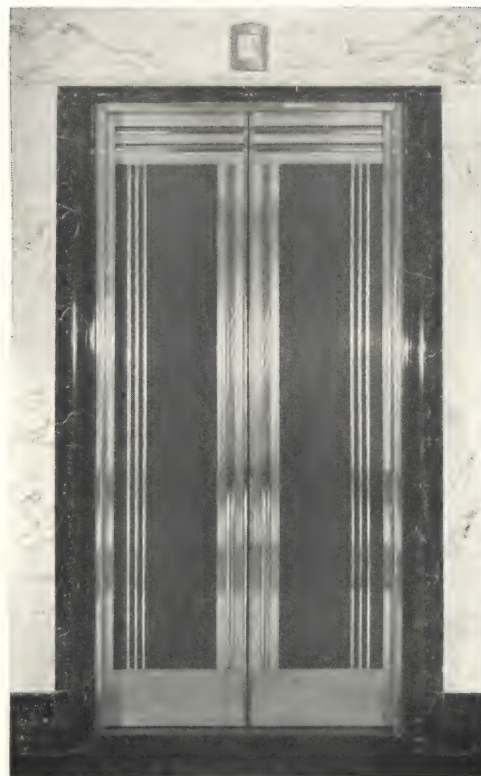
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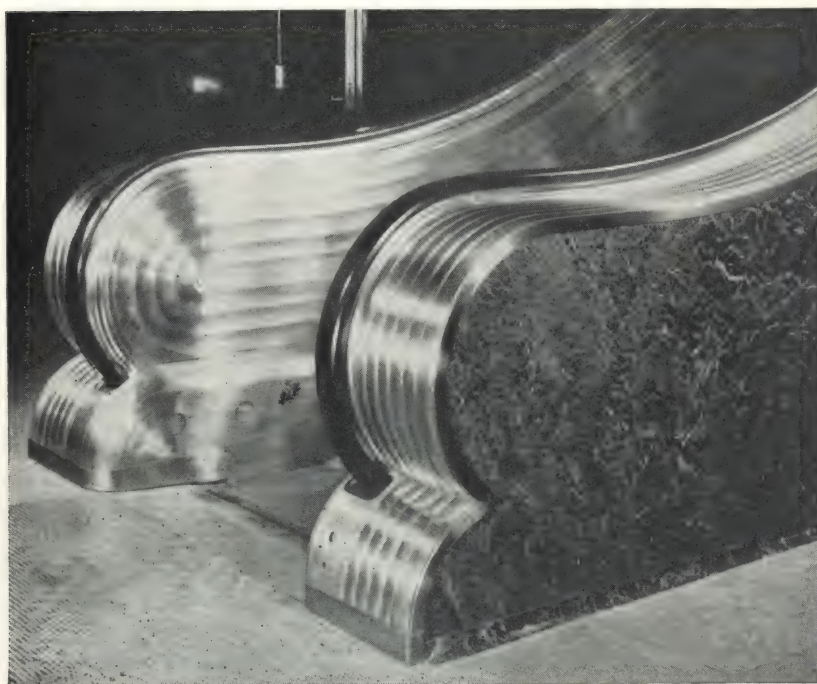
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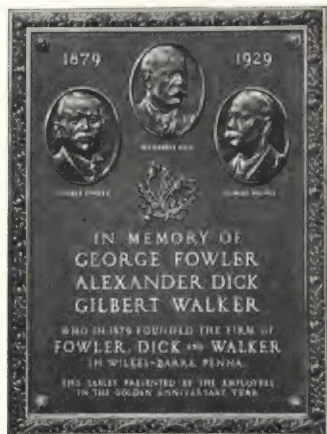
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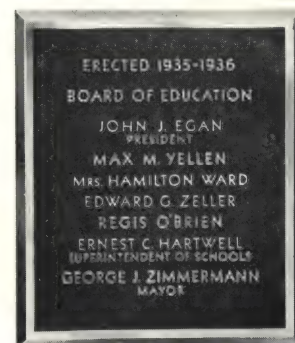
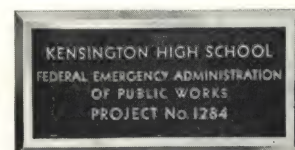
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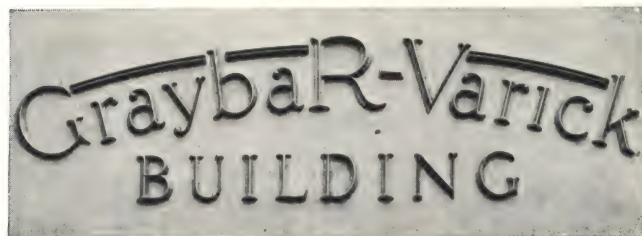
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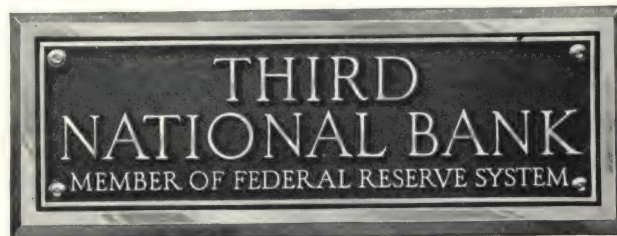
Bronze Tablet

For Kensington High School, Federal Emergency Administration of Public Works Project No. 1284. Erected 1935-36. Note the fine clean-cut lettering. This is an excellent example of a very simple, yet well balanced design.



Graybar-Varick Building

Individual bronze letters used extensively on fronts of buildings and for embedding in sidewalks. Cast from standard patterns or from special designs made to your sketch. Furnished in a variety of cross sections and finishes. Letters come provided with prongs projecting from the back or can be arranged with any other method for attaching. Write us for suggestions.



Third National Bank

Standard classic letters. Raised double border with wide polished bevel. Available in all sizes. Signs of this type are particularly suitable for bank use, their endurance associating itself with the stability of the institution whose entrance they beautify.

TREVOR F. JONES & CO.

Manufacturers and Designers of Bronze Tablets, Letters and Inlaid Vitreous Enamel Products

TELEPHONE
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408 West Broadway
NEW YORK, N. Y.

ESTABLISHED
1883

Products

CAST TABLETS of brass, bronze, aluminum, benedict nickel, stainless steel and monel metal.

INCISED or CAST BRONZE TABLETS with Inlaid Vitreous Enamel Letters, Borders, etc.

INDIVIDUAL LETTERS inlaid with vitreous opaque or translucent enamel; also Individual Letters of brass, bronze, aluminum, benedict nickel, stainless steel or monel metal, for building-fronts and similar uses.

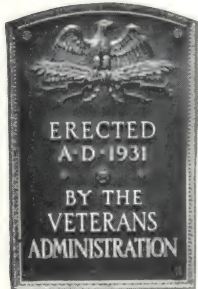
EXTERIOR and INTERIOR DIRECTORIES for commercial, office or professional buildings, with cast or incised inlaid vitreous enamel name plates.

HAND ENGRAVED PLATES.

ELECTRIC DIRECTIONAL and ELEVATOR SIGNS in bronze or aluminum.

BANK TELLER and WICKET PLATES.

BRONZE and COPPER RAISED LETTER ASSEMBLED SIGNS, consisting of individual bronze letters mounted on oxidized copper background.



Heavy Cast Bronze Tablet
For Veterans Hospital at Biloxi, Miss.



Brass Engraved Tablet
Letters and border are hand engraved on heavy brass plate filled in with black enamel



Electric Elevator and Directional Signs

We are equipped to produce electric elevator and directional signs to harmonize with any architectural motif. The lobbies of many of America's finest buildings are beautified with signs produced in our shops



Bronze and Granite Memorial

An ideal combination for outdoor setting or where walls, etc., are not available for affixing tablets. The tablet is cast in bronze, with likeness in modeled relief, laurel leaf border and hand hammered background. The stone is of polished Balmoral granite 3x5x1 1/2 ft. thick, with a natural rough base. Set at Yankee Stadium, New York City



Cast Bronze Announcement Case

This case is cast bronze with sheet background for center part which has plate glass door with removable felt covered board for posting announcements



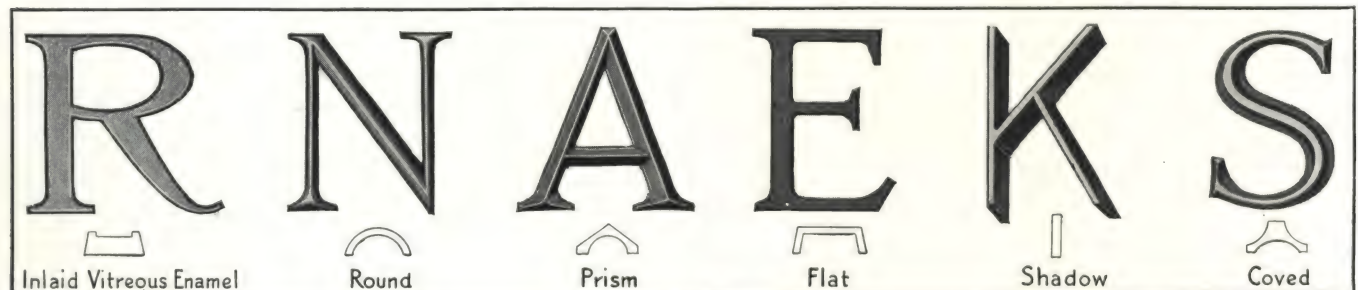
Inlaid Vitreous Enamel Bronze Sign

Letters are ivory and arrow green vitreous enamel; border is extruded bronze. Both conservative and attractive effects can be achieved. Particularly adapted for the reproduction of trade-marks and designs in permanent colors. Smaller sizes are used in many public buildings to designate rooms, corridors, wickets, etc.

Right:

Inlaid Vitreous Enamel Bronze Tablet

This tablet is cast bronze with background of outer ring finished in blue vitreous enamel; center of letters are gold colored enamel. Background around bell is oxidized statuary brown; bell all blue enamel with lines and letters in white enamel



Cast Individual Bronze Letters

Made in any size or design. Details of our standard designs gladly furnished. Please indicate preferred size and arrangement together with available space.

ROOFING 8

- SECTION -

MEMORANDA

ROOFING 8

- SECTION -

CATALOGS 1 to 21

**BUILT-UP AND
PREPARED**

**ASPHALT AND ASBESTOS
SHINGLES**

MEMORANDA

THE AMERICAN BRASS COMPANY

Distributors of Anaconda "Electro-Sheet" Copper

GENERAL OFFICES
WATERBURY, CONNECTICUT

For Manufacturing Plants, Offices and Agencies, see our page on Sheet Copper

Products

ANACONDA "ELECTRO-SHEET" COPPER for use with alternate layers of asphalt in built-up roof construction; also for damp-proofing and weather-proofing foundations, walls, floors and roofs.

For pages on Architectural Extruded Shapes and Drawn Shapes; Brass and Copper Pipe and Copper Water Tubes; Everdur Metal; and Sheet, Roll and Strip Copper, see File Index.

"Electro-Sheet" Copper

A recent development by ANACONDA metallurgists—the electro-deposition of solid copper—has made possible the production of thin copper sheets in wide widths and practically unlimited lengths. This product, designated as "ELECTRO-SHEET," is strikingly uniform in weight and thickness. Its availability has led to experimentation with "ELECTRO-SHEET" for manifold uses, most prominent of which in the building field are its application in the construction of built-up roofs and its use, either plain or with a processed backing, as a damp-proofing and weather-proofing medium in foundations, cellars, exterior walls and roofs.

Built-up Copper Roofs

Built-up sheet copper roofing may be described as alternate layers of asphalt and ANACONDA "ELECTRO-SHEET" built up on the roof—the Copper sheets being 30 in. wide and weighing 2 oz. per square foot. Such a multiple-ply roof retains all the desirable qualities of copper roofing, at a price which compares favorably with the better grades of multiple-ply felt roofings.

The combination of copper and asphalt offers several



distinct advantages, chief among which are that: (1) The copper is in itself water-proof, as well as highly resistant to the destructive elements of the atmosphere. Consequently, it will not deteriorate when the top coating of asphalt develops cracks;

(2) The non-porous sheet of copper protects the inner layers of asphalt from the destructive action of the sun's rays and prevents evaporation of the volatile constituents of the asphalt, thus prolonging its life; (3) The non-porous copper eliminates absorption of air and moisture through capillary attraction, generally conceded to be the principal cause of blisters in built-up roofs.

The installation can be made by any duly authorized and qualified roofer and may be applied to any type of deck.

Weather-proofing and Damp-proofing

ANACONDA "ELECTRO-SHEET" Copper, correctly applied to the walls and floor of the cellar, in much the same way as other water-proofing material, offers durable and inexpensive protection.

Applied in the same manner as building paper, it serves as an efficient and low-cost damp-proofing and weather-proofing material for walls and roofs. Thus used, "ELECTRO-SHEET" prevents moisture from entering basements, keeps cellars dry. It makes houses cooler in summer and easier to heat in winter.

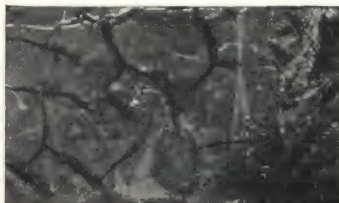
This paper-thin Copper product is available bonded to Sisalkraft paper ("Copper Armored Sisalkraft"); with a backing of 20-lb. asbestos felt ("Copperclad"); and bonded to Robertson Protected Metal ("Copper Covered RPM").

Floor Lining

Inexpensive and effective elimination of the dampness dangers to the finished floor—especially when laid over

concrete—is accomplished by applying a lining of "ELECTRO-SHEET" to the sub-floor, according to a method developed by N. L. Dahlander. The Copper, in rolled up sheets known as "Copper Roll," is laid in a special non-soluble adhesive. Laps are easily and permanently sealed with a special low melting point solder wire.

Section No. 1



Section No. 2

Section No. 3

Exposed Sample Discloses Value of "Electro-Sheet" Copper in Built-up Roofs

This photograph (actual size) illustrates the result of exposure on a small test board, coated with asphalt and covered with 2-oz. "ELECTRO-SHEET." The board was exposed day and night at Perth Amboy, N. J., for a period of 4 years.

(1) At the start of the test, a portion of the asphalt was not covered with "ELECTRO-SHEET." See section (1) in photograph. It will be noted that considerable deterioration took place in the asphalt during the 4 years of exposure.

(2) At the end of the first year the "ELECTRO-SHEET" covering was removed from the adjacent asphalt. During the following 3 years of the test, this unprotected asphalt in section (2) deteriorated similarly to section (1).

(3) At the conclusion of the 4-year test the "ELECTRO-SHEET" covering was removed from the remainder of the board. See section (3). The uneven surface texture was due to the adherence of the asphalt to the "ELECTRO-SHEET." This asphalt, protected by the copper throughout the exposure test, retained its original softness and pliability—clearly indicating the protective value of 2-oz. "ELECTRO-SHEET." This test provides striking evidence of the durability of built-up "ELECTRO-SHEET" Roofs.

THE BARBER ASPHALT COMPANY

Genasco Bonded Asphalt Built-up Roofing, Flashings, Mastic,
Waterproofing and Other Asphaltic Products

1600 Arch Street
PHILADELPHIA, PA.

NEW YORK, N. Y.
342 Madison Avenue

ST. LOUIS, MO.
701 International Building

CHICAGO, ILL.
7 South Dearborn Street

BARBER ASPHALT PRODUCTS

GENASCO TRINIDAD LAKE ROOFING
ASPHALT
GENASCO ALL-RAG STANDARD AND EXTRA
HEAVY FELTS
GENASCO ASBESTOS ROOFING FELTS AND
BASE SHEETS
GENASCO FLASHING FABRICS
GENASCO REINFORCED CAP SHEET
GENASCO ASPHALT MASTIC FLOORING
GENASCO ACID PROOF MASTIC FLOORING
EMULMASTIC (a Cold-laid Industrial Flooring)
GENASCO TRINIDAD LAKE ASPHALT FLUXES
GENASCO SPECIAL HARDENER FOR MASTIC
GENASCO WATERPROOFING ASPHALTS
GENASCO WATERPROOFING FABRICS
GENASCO SPANDREL CLOTH
GENASCO CONCRETE PRIMER
GENASCO RESATURATOR



GENASCO RESURFACER
GENASCO PLASTIC CEMENT (Roofing Ce-
ment)
GENASCO ASPHALT ROOF COATINGS
GENASCO PATCHING FABRIC
GENASCO LATITE SHINGLES
GENASCO STA-RITE SHINGLES
GENASCO SEALBAC INDIVIDUAL AND STRIP SHINGLES
GENASCO HEXAGON STRIP SHINGLES
GENASCO HEXTAB STRIP SHINGLES
GENASCO MAS-TAB (Overlay Process) STRIP SHINGLES
GENASCO DOUBL-DIP TRU-BRICK SIDING
GENASCO 4-POINT SIDING STRIPS
GENASCO BRICK-LIKE SIDING
GENASCO SMOOTH AND SLATE SURFACE ROOF-
INGS
GENASCO BUILDING PAPERS
GENASCO BOILER SETTING CEMENT

GENASCO STANDARD TRINIDAD LAKE ASPHALT BUILT-UP ROOFING

Standard Trinidad Lake Asphalt Built-up Roofs Constructed with All-Rag Felts

Engineering facts prove that a roof constructed with Trinidad Lake Roofing Asphalt and Genasco All-Rag Felts contains more waterproofing than is obtained from the same form of construction employing asphalts and felts of inferior quality.

Bonds—Genasco Trinidad Lake Asphalt Built-up roofs will be bonded, when desired, by the United States Fidelity and Guaranty Company of Baltimore, Maryland, which guarantees against maintenance expense for ten, fifteen or twenty years depending upon the type of roofing used. There is, also, a Genasco Flashing covered by a bond, when desired.

Asbestos Built-up Roofs

To cover those cases in which it is desired to obtain Underwriters' Class "A" rating for a lighter type of roof construction, without gravel surfacing, a complete

line of asphalt-asbestos felts and base sheets is offered. This makes it possible to combine the recognized weathering superiority of Trinidad Lake Roofing Asphalt with the additional fire-resisting qualities of asbestos.

Bonds—Genasco Trinidad Asbestos Built-up Roofs will be bonded, which guarantees against maintenance expense for ten, fifteen or twenty years depending upon the type of roofing used. There is, also, a Genasco Flashing covered by a bond, when desired.

Approved Roofing Contractors

To insure the proper application of Genasco Trinidad Lake Asphalt Built-up Roofings, approved roofing contractors, whose selection is based upon thoroughness of workmanship and responsibility, have been employed throughout the country.

Specifications are outlined in a chart on the opposite page.

GENASCO ASPHALT MASTIC FLOORS AND MEMBRANE WATERPROOFING

Genasco Asphalt Mastic Floors

Where floors must stand heavy traffic, Genasco Asphalt Mastic floors give unsurpassed service. They can be applied over old floors without stopping production.

Genasco Asphalt Mastic floors are resilient—of particular value to employees constantly on their feet. Laid in a monolithic sheet. Sanitary . . . no cracks to catch dirt . . . non-absorbent . . . do not retain odors and are particularly desirable in food manufacturing plants. Waterproof—can be flushed without damage or leakage. Also noiseless, dustless, fire-resistant, acid-proof and easy to repair.

Genasco Membrane Waterproofing Materials

Experience of nearly half a century enables us to furnish waterproofing asphalts and fabrics best suited for the most exacting conditions.

Submit Your Problems to Our Engineering Department

This Department is eager to co-operate with architects on any problem involving the possible use of asphalt and will gladly recommend specifications to meet specific conditions.

CHART OF GENASCO TRINIDAD LAKE ASPHALT BUILT-UP ROOFINGS

Term of guar- anty bond, years	Designation	Type of deck	Limita- tion of pitch, inches	Surface finish	Composition		Weight of materials, lbs.					Total weight per square applied, lbs.			Under- writers' labora- tories rating	Specifi- cation to be fol- lowed for steel decks, Gypsum- tile or insula- tion	Specifica- tion number
					Layers of felt	No. of mop- pings of asphalt	Weight of felts	Trini- dad Lake roofing asphalt	Gen- asco con- crete primer	Gravel surfac- ing	Slag surfac- ing	Smooth sur- faced	Gravel surfac- ing	Slag surfac- ing			
ALL RAG FELTS ASPHALT SATURATED																	
10	Standard Trinidad	Wood	6	Smooth	1-30-lb. felt (base) lapped 2 in. 2-15-lb. felts lapped 17 in.	3	60	90				150			C		R-10-B
		Concrete	6	Smooth	3 15-lb. felts lapped 22 in.	4	45	120	10			175			C	*	R-10-C
15	Genasco 15 year Bonded roof	Wood	3	Gravel or slag	1-30-lb. felt (base) lapped 2 in. 2-15-lb. felts lapped 17 in.	3	60	110		400	300		570	470	A		R-15-BG
		Concrete	3	Gravel or slag	3-15-lb. felts lapped 22 in.	4	45	140	10	400	300		595	495	A	*	R-15-CG
20	Genasco 20 year Bonded roof	Wood	3	Gravel or slag	1-30-lb. felt (base) lapped 2 in. 3-15 felt lapped 22 in.	4	75	140		400	300		615	515	A		R-20-BG
		Concrete	3	Gravel or slag	4-15-lb. felts lapped 24½ in.	5	60	170	10	400	300		640	540	A	*	R-20-CG
ASBESTOS FELTS—ASPHALT SATURATED																	
10	Genasco 10 year Bonded asbestos roof	Wood	6	Smooth	1-35-lb. asbestos felt (base) lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	3	75	90				165			A		A-10-B
		Concrete	6	Smooth	1-35-lb. asbestos felt (base) lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	4	75	120	10			205			A		A-10-C
	Genasco 10-year Bonded combina- tion asbestos roof	Wood	6	Smooth	1-30-lb. rag felt (base) lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	3	70	90				160			*		AR-10-B
		Concrete	6	Smooth	1-30-lb. rag felt (base) lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	4	70	120	10			200			A		AR-10-C
15	Genasco 15 year Bonded asbestos roof	Wood	6	Smooth	1-60-lb. asbestos base sheet lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	3	100	90				190			A		A-15-B
		Concrete	6	Smooth	1-60-lb. asbestos base sheet lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	4	100	120	10			230			A		A-15-C
	Genasco 15 year Bonded combina- tion asbestos roof	Wood	6	Smooth	1-45-lb. Genasco base sheet lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	3	85	90				175					AR-15-B
		Concrete	6	Smooth	2-15-lb. rag felts lapped 17 in. 2-20-lb. asbestos felts lapped 17 in.	5	70	150	10			230			A	*	AR-15-C
20	Genasco Trinidad 20 year Bonded asbestos roof	Wood	6	Smooth	1-60-lb. asbestos base felt lapped 2 in. 3-20-lb. asbestos felts lapped 22 in.	4	120	120				240			A		A-20-B ⁷
		Concrete	6	Smooth	1-60-lb. asbestos base felt lapped 2 in. 2-20-lb. asbestos felts lapped 17 in.	4	100	120	10			230			A		A-20-C
20	Genasco 20 year Bonded asbestos roof over insulation	Wood or non-com- bustible deck	6	Smooth	4-20-lb. asbestos felts lapped 24½ in.	5	80	150				230					A-20-I

Note: Special specifications for unusual conditions are available on request.

*Use for Steel Docks.
Gypsum—Insulation.

MEMORANDA

REFERENCE MANUAL

FOR ARCHITECTS AND ENGINEERS



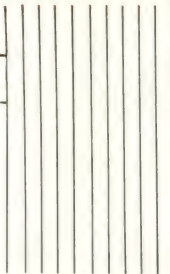
Barrett

**BUILT-UP ROOFING, FLASHING, ROOF-DRAINAGE,
WATERPROOFING AND DAMPPROOFING**

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Architect's and Engineer's REFERENCE MANUAL

This manual contains specifications and detailed drawings treating with the following subjects:

Built-Up Roofing—for flat roof decks—	Section I
Built-Up Roofing—for steep roof decks—	Section II
Roof Flashing	Section III
Roof Drainage	Section IV
Waterproofing and Dampproofing	Section V

The data presented comprise the most practical methods and procedure based on three-quarters of a century's experience, the essence of which is incorporated to the fullest extent possible. The details are arranged to show exactly the construction which may be expected when the accompanying specifications are adhered to, the object being to provide the architect, builder or building owner with reference material which is designed from his viewpoint and with his interest in mind.

Architects and construction engineers in all parts of the country have found the methods recommended by Barrett in this manual to be entirely reliable and in accord with the most up-to-date engineering practices. The practical demonstration of these methods and the use of the materials recommended on so many of the nation's finest and largest structures prove their merit.

For any unusual roofing or waterproofing problems, or conditions not covered in this book, a construction service department is maintained, the members of which are available for consultation at any time and without obligation.

THE TECHNICAL SERVICE BUREAU

of The Barrett Company places at the disposal of all those interested, general and technical information and facts of value in the fields served by Barrett. This service is supplied without cost or obligation as The Barrett Company's contribution to the broad development of these fields in which it has been identified with leadership for many years. Address The Technical Service Bureau of The Barrett Company, 40 Rector Street, New York, N. Y.

The *Barrett* Company

40 RECTOR STREET » » « « NEW YORK

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THE BARRETT CO., LTD.,
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BARRETT PROTECTION FOR BUILDINGS

BUILT-UP ROOFING · FLASHING · ROOF DRAINAGE

MEMBRANE WATERPROOFING · DAMPPROOFING



Code letters on this drawing correspond to Barrett Specifications for roofing, waterproofing or dampproofing, as indicated in the Legend below.

Page numbers refer to the BARRETT ARCHITECT'S & ENGINEER'S REFERENCE MANUAL.

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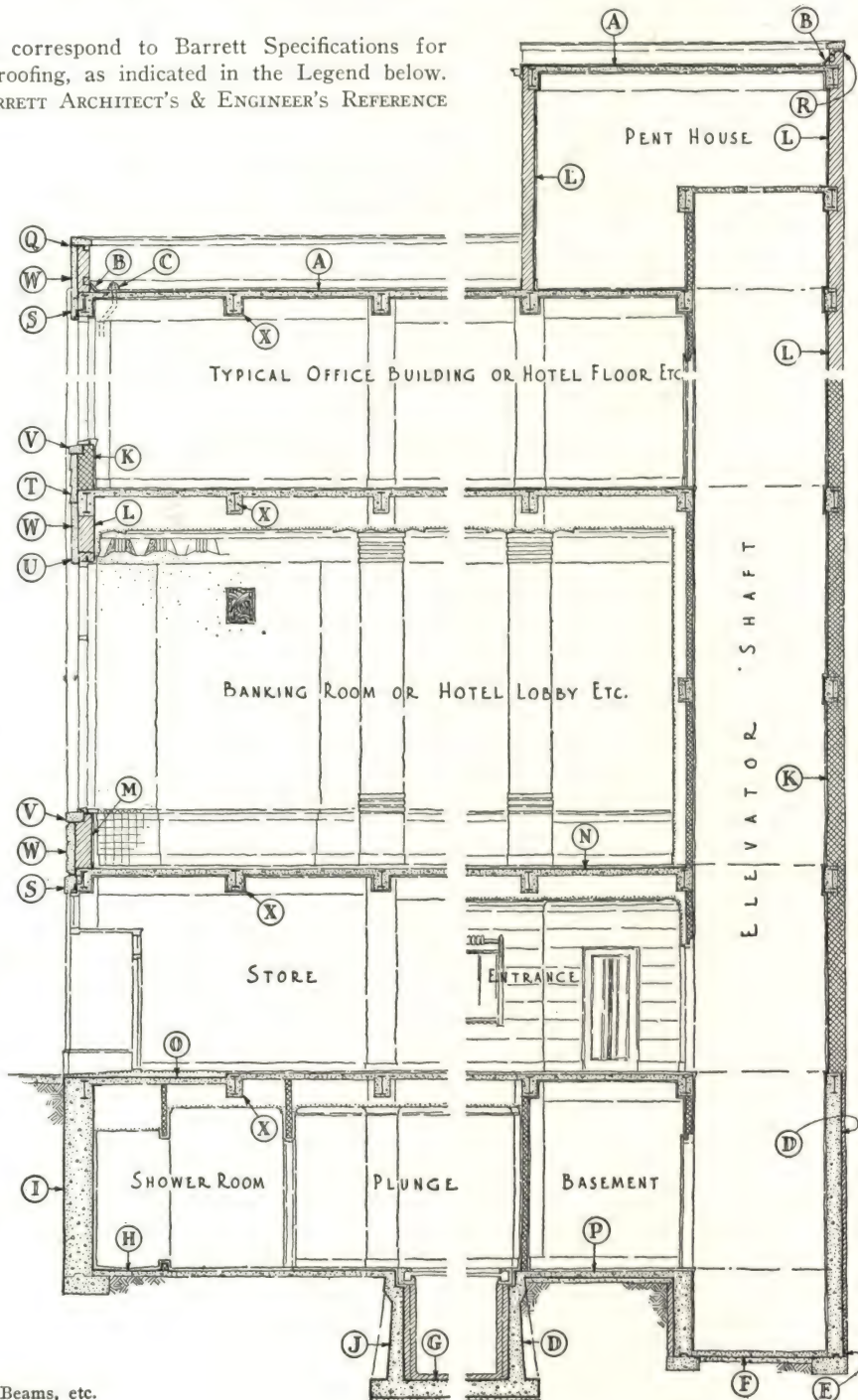
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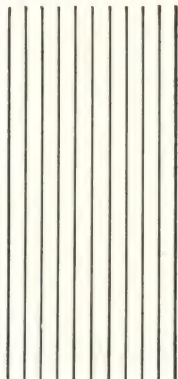
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BARRETT PROTECTIVE PAINT

X Everjet Protective Paint for Steel Beams, etc.	
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Barrett's



Between the World and the Weather

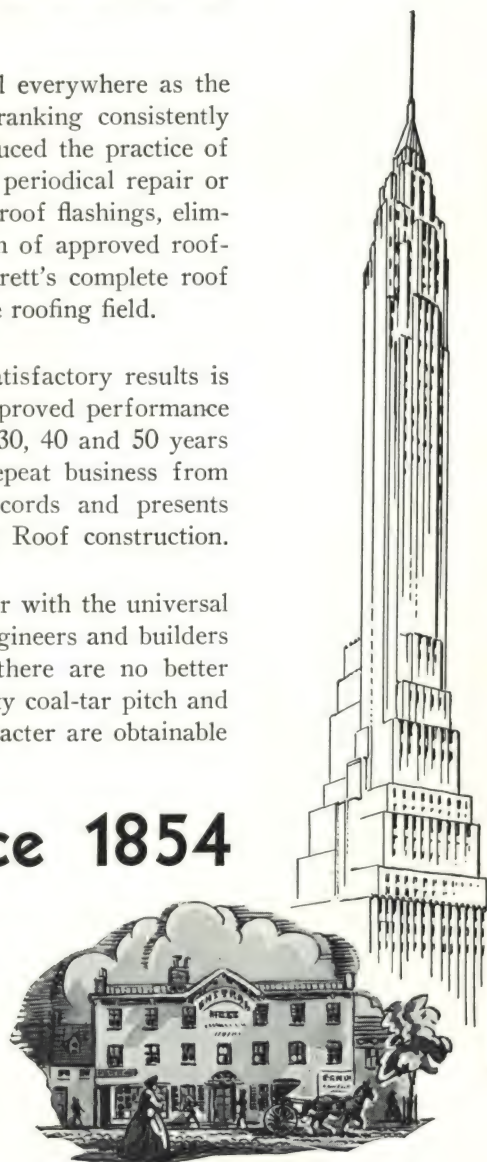
BARRETT'S leadership in roofing and waterproofing dates back more than three-quarters of a century. Pioneers in the field, Barrett has, since the early days of built-up roof construction, improved its materials, application methods and facilities for service, stride for stride with the advance of the building industry.

Today the famous Barrett Specification is recognized everywhere as the standard of value for built-up roof construction—a ranking consistently held since its introduction decades ago. Barrett introduced the practice of bonding roofs, definitely freeing building owners from periodical repair or maintenance expense. Barrett initiated the bonding of roof flashings, eliminating divided responsibility. The Barrett organization of approved roofing contractors was the first ever established; and Barrett's complete roof inspection service, introduced years ago, is unique in the roofing field.

That this complete service has obtained uniformly satisfactory results is best evidenced by thoroughly authenticated records of proved performance—many of the early installations having already given 30, 40 and 50 years of service without repair or maintenance expense. Repeat business from nationally known organizations substantiates these records and presents staunch testimony to the enduring qualities of Barrett Roof construction.

We believe that such records of performance, together with the universal acceptance of this type of roof by leading architects, engineers and builders of modern structures, convincingly demonstrate that there are no better materials for built-up roof construction than high quality coal-tar pitch and roofing felt . . . and that no finer materials of this character are obtainable than those bearing the Barrett label.

. . . . Since 1854



Time gives Proof of

Roof value that impresses architects, building owners and contractors is roof value that has existed long enough to have proved itself. Since the earliest installations of Barrett roofs, Barrett materials and application methods have made lasting roofs—and lasting friends.



- 1—New York Central Warehouse and Freight Depot
Beach and Varick Streets
New York, N. Y.
- 2—Exchange Building
Boston, Mass.
- 3—Eastern Steamship Lines
North Side India Wharf
Boston, Mass.
- 4—J. T. Fargason & Co. Building
Memphis, Tenn.
- 5—Tiffany Building
15th Street and Union Square
New York, N. Y.



Roof Performance...

Many famous old buildings, built half a century ago and longer, find their original Barrett roofs still giving satisfactory service; while the outstanding structures of recent years, roofed by Barrett, are far too numerous to picture or even to list in these pages.

- 1—The Field Building
Chicago, Ill.
- 2—Pennsylvania Railroad Station
Philadelphia, Pa.
- 3—Hershey Industrial School
Hershey, Pa.
- 4—Rockefeller Center
New York, N. Y.
- 5—Modern Residence
Shreveport, La.
- 6—Christian Science Monitor
Publishing House
Boston, Mass.
- 7—Empire State Building
New York, N. Y.



Barrett Specification Roofs*

and the Barrett Approved Roofer

OF THE many factors essential to satisfactory roof performance, none are more important than (1) proper selection of materials and (2) the employment of skilled workmanship in their application. The first is entirely a matter of specification provision and enforcement; the second, of selecting a dependable and experienced contractor whose ability to execute the character of work involved has been thoroughly established.

Barrett Specification Roofs are applied only by Barrett Approved Roofers; the selection of whom is based upon experience, ability and integrity. Barrett Approved Roofers everywhere are dependable and invariably are leaders in their communities. Architects, Engineers and Builders may rely on them completely to handle the character of work incorporated in this publication.

As the work of Barrett Approved Roofers is executed under the direct supervision and with the co-operation of technically experienced Barrett representatives, the purchaser of a Barrett Specification Roof is assured a degree of satisfactory roof performance far beyond that prescribed in the terms of any guarantee or bond.

* Trade Mark Registered U.S. Pat. Off.

Fairchild Aerial Surveys, Inc.



Barrett-Roofed Buildings Dominate New York's Skyline

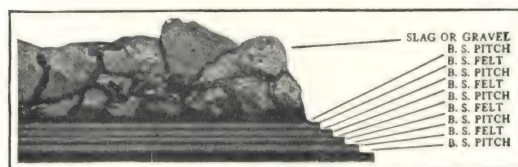
SECTION 1

Flat Roof Specifications and Details

ROOFs having inclines of not more than two inches in one foot are generally classified as flat roofs.

The practical purpose of the flat roof, or of any roof, is to protect the interior, the contents and the occupants of a building from rain, snow, heat and cold. In addition, a good roof should provide effectual protection against the spread of fire, prevent dampness, add to the character of the building, and offer freedom from periodical repair or maintenance expense.

The Barrett Specification Roof—Type "AA" or Type "A"—meets these requirements for flat roof construction.



Barrett Specification Roofing

Built of alternate layers of Barrett Specification Pitch and Felt (the top coat of pitch is poured) with an indestructible wearing surface of gravel or slag.

It is constructed of highest quality coal-tar pitch and roofing felt, properly applied in the membrane manner, and surfaced with gravel, roofing slag, promenade slate or quarry tile.

Barrett Specification Pitch is preserved by water. Its life-prolonging oils are protected by the same dampness and moisture that weaken ordinary materials. Pitch is self-healing; is virtually immune to climatic variations; and possesses creosote properties that outlaw fermentation or the development of fungi.

Both Barrett Specification Pitch and Barrett Specification Felt are manufactured to be—and are conceded to be—the best it is possible to produce. Gravel, slag, slate

or tile provides a fire-safe, practically indestructible wearing surface which protects the membrane and permits the use of a maximum of waterproofing materials.

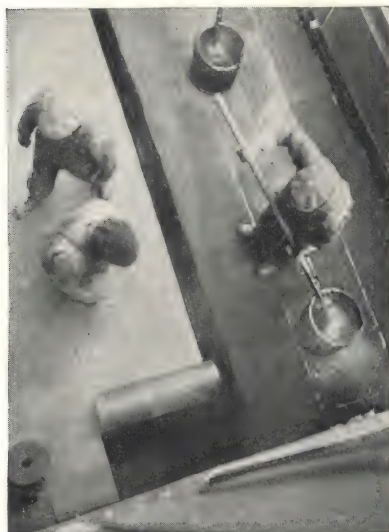
Barrett Specification Roofs take the base rate of insurance. They require no painting or coating. Their moderate first cost and enduring qualities effect a cost per year of service far below that of any other type of built-up roof known. They provide a permanent part of permanent building construction.

Barrett also manufactures the time tested Black Diamond Roofing Materials. Black Diamond Pitch and Black Diamond Felt meet the exacting requirements of recognized Government, ASTM and AREA specifications. When applied by Barrett Approved Roofers, in accordance with our requirements and specification procedure contained herein, Barrett Black Diamond Roofs are bonded against repair and maintenance expense for the periods stated.

The specifications which follow are based on proper use of materials of recognized quality and quantity. They have been formulated by THE BARRETT COMPANY and cover many particular types of flat roof construction recommended for use under the specific conditions outlined. Specifications for procedure under conditions not contained herein, or where reroofing operations are involved, will be furnished gladly on request.



The Barrett Inspector Making the Famous "Section Test"



Applying Barrett Specification Felt in Hot Mopping of Barrett Specification Pitch



The Lackawanna Railroad Freight Terminal, Jersey City, Is Protected by a Barrett Specification Roof Surfaced with Gravel and Slag



The Finished Wearing Surface of Gravel or Slag is Embedded in a Hot Pouring of Barrett Specification Pitch



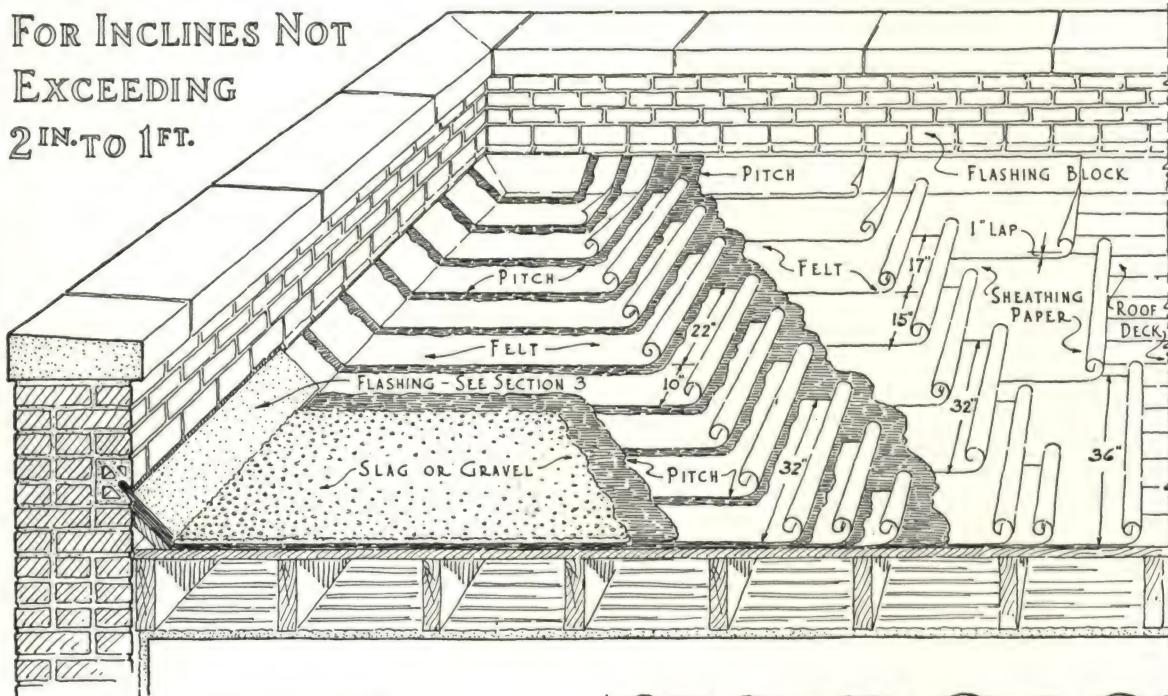
BARRETT SPECIFICATION ROOFS

20 YEAR GUARANTY BOND TYPE 'AA'

FOR USE OVER WOOD DECKS



FOR INCLINES NOT
EXCEEDING
2 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be of seasoned lumber, smooth and free from loose boards, large cracks or knot holes, and free from loose material. If roof deck is inclined, it shall be properly graded to outlets.

First—Lay one (1) thickness of sheathing paper or unsaturated felt weighing not less than five (5) pounds per one hundred (100) square feet, lapping the sheets at least one (1) inch.

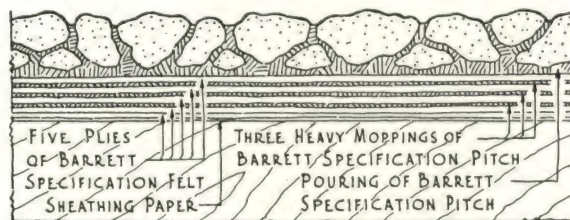
Second—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one and nail as often as is necessary to hold in place until remaining Felt is laid.

Third—Coat the entire surface uniformly with Barrett Specification Pitch.

Fourth—Over the entire surface lay three (3) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-two (22) inches, over preceding one, mopping with Barrett Specification Pitch the full twenty-two (22) inch lap on each sheet so that in no place shall Felt touch Felt. Such nailing as is necessary shall be done along the upper edge of each sheet so that all nails will be covered by not less than two (2) plies of Felt.

Fifth—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than one hundred and fifty (150) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and



FULL SIZE SECTION

the Pitch shall not be heated above four hundred (400) degrees Fahrenheit.

The roof shall be applied by a roofing contractor approved by The Barrett Company. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Co. of Baltimore, covering a period of twenty (20) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "AA", laid in accordance with the Barrett Specification (for use over boards), by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty (20) years from date of completion, in accordance with Note No. 1 of said specification.

See Section No. 3 for Specifications and Details on Flashings.

Barrett



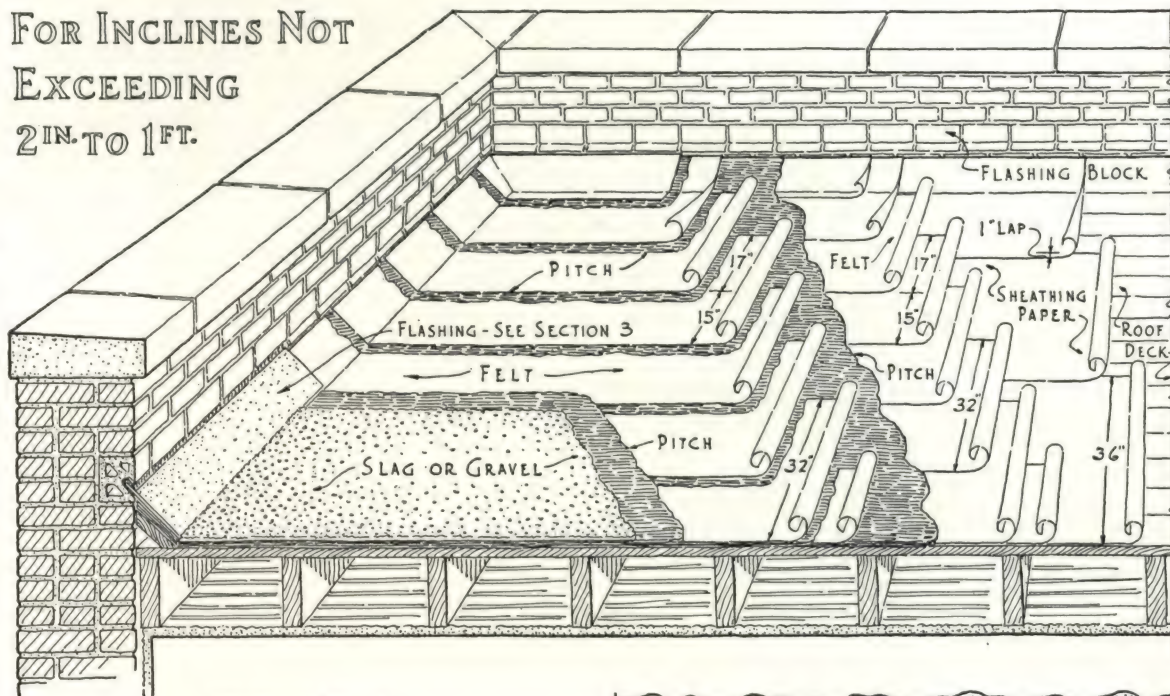
BARRETT SPECIFICATION ROOFS

15 YEAR GUARANTY BOND TYPE 'A'

FOR USE OVER WOOD DECKS



FOR INCLINES NOT
EXCEEDING
2 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be of seasoned lumber, smooth and free from loose boards, large cracks or knot holes, and free from loose material. If roof deck is inclined, it shall be properly graded to outlets.

First—Lay one (1) thickness of sheathing paper or unsaturated Felt, weighing not less than five (5) pounds per one hundred (100) square feet, lapping the sheets at least one (1) inch.

Second—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, and nail as often as is necessary to hold in place until remaining Felt is laid.

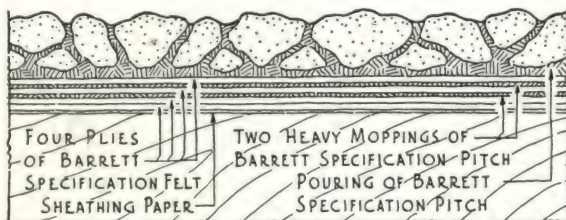
Third—Coat the entire surface uniformly with Barrett Specification Pitch.

Fourth—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, mopping with Barrett Specification Pitch the full seventeen (17) inch lap on each sheet so that in no place shall Felt touch Felt. Such nailing as is necessary shall be done along the upper edge of each sheet so that all nails will be covered by not less than two (2) plies of Felt.

Fifth—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The felt shall be laid without wrinkles or buckles. Not less than one hundred and twenty-five (125) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof,

See Section No. 3 for Specifications and Details on Flashings.



FULL SIZE SECTION

and the Pitch shall not be heated above four hundred (400) degrees Fahrenheit.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of fifteen (15) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "A," laid in accordance with the Barrett Specification (for use over boards), by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for fifteen (15) years from date of completion, in accordance with Note No. 1 of said specification.

Barrett



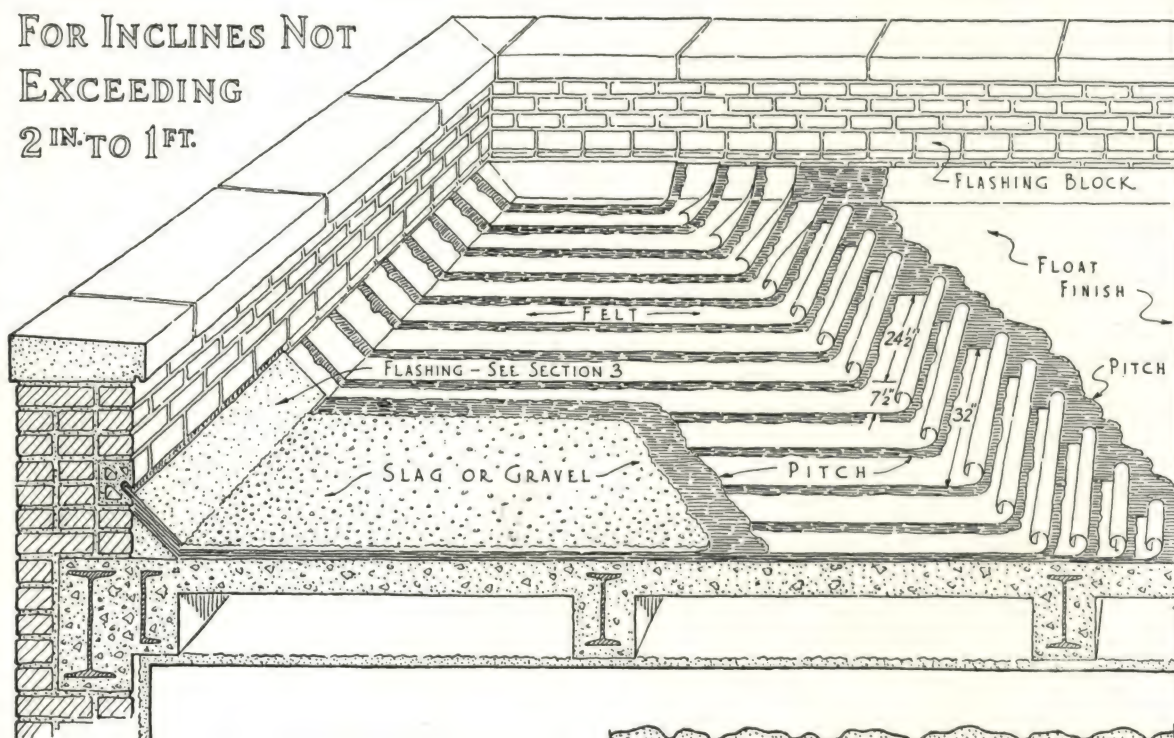
BARRETT SPECIFICATION ROOFS

20 YEAR GUARANTY BOND TYPE 'AA'

FOR USE OVER POURED CONCRETE OR GYPSUM



FOR INCLINES NOT
EXCEEDING
2 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be smooth, firm, dry and free from loose material. If roof deck is inclined, it shall be properly graded to outlets. On inclines exceeding one (1) inch to the foot, roof deck shall permit nailing or wood nailing strips shall be provided.

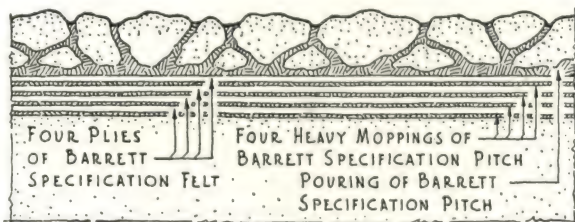
First—Coat the roof deck uniformly with Barrett Specification Pitch.

Second—Over the entire surface lay four (4) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-four and one-half ($24\frac{1}{2}$) inches over preceding one, mopping with Barrett Specification Pitch the full twenty-four and one-half ($24\frac{1}{2}$) inch lap on each sheet, so that in no place shall felt touch Felt. Such nailing as is necessary shall be done along upper edge of each sheet so that all nails shall be covered by not less than three (3) plies of felt.

Third—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than two hundred (200) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degrees Fahrenheit.

See Section No. 3 for Specifications and Details on Flashings



FULL SIZE SECTION

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of twenty (20) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "AA," laid in accordance with the Barrett Specification (for use over poured concrete or gypsum) by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty (20) years from date of completion, in accordance with Note No. 1 of said specification.

Barrett



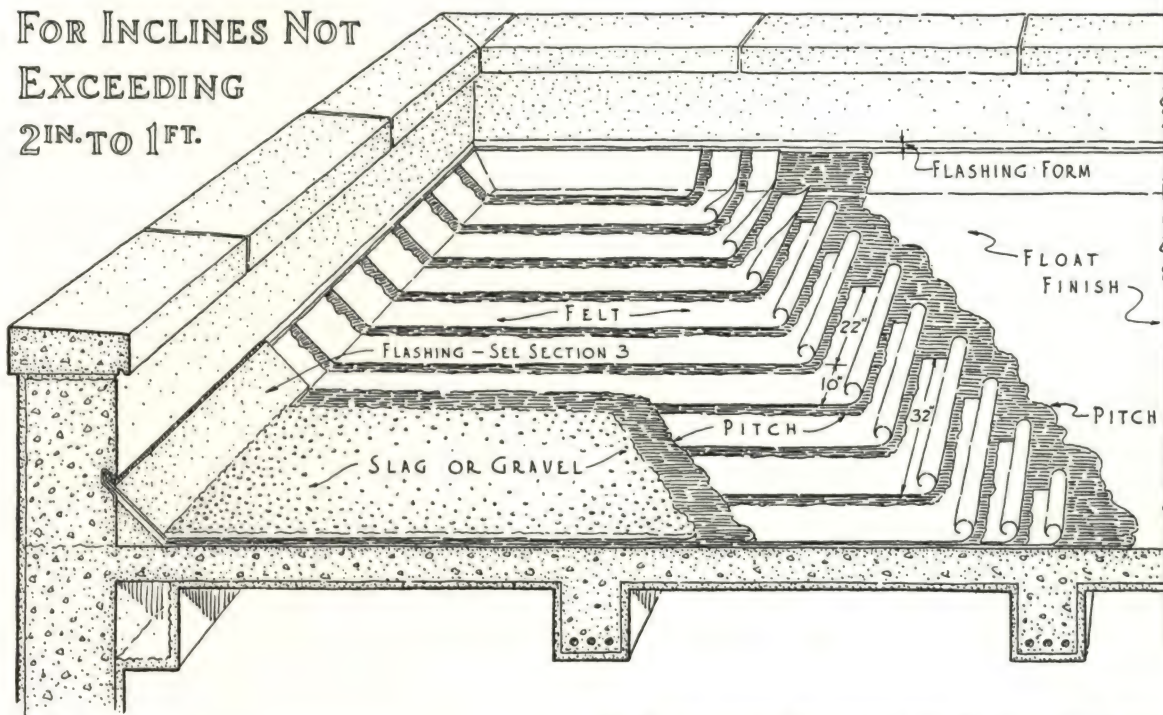
BARRETT SPECIFICATION ROOFS

15 YEAR GUARANTY BOND TYPE "A"

FOR USE OVER POURED CONCRETE OR GYPSUM



FOR INCLINES NOT
EXCEEDING
2 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be smooth, firm, dry and free from loose material. If roof deck is inclined, it shall be properly graded to outlets. On inclines exceeding one (1) inch to the foot, roof deck shall permit nailing or wood nailing strips shall be provided.

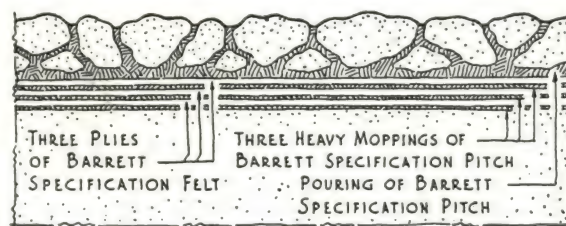
First—Coat the roof deck uniformly with Barrett Specification Pitch.

Second—Over the entire surface lay three (3) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Barrett Specification Pitch the full twenty-two (22) inch lap on each sheet so that in no place shall Felt touch Felt. Such nailing as is necessary shall be done along the upper edge of each sheet so that all nails shall be covered by not less than two (2) plies of Felt.

Third—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than one hundred and seventy-five (175) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degree Fahrenheit.

The roof shall be applied by a roofing contractor ap-



FULL SIZE SECTION

proved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of fifteen (15) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "A," laid in accordance with the Barrett Specification (for use over concrete or gypsum), by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for fifteen (15) years from date of completion, in accordance with Note No. 1 of said specification.

See Section No. 3 for Specifications and Details on Flashings.

Barrett



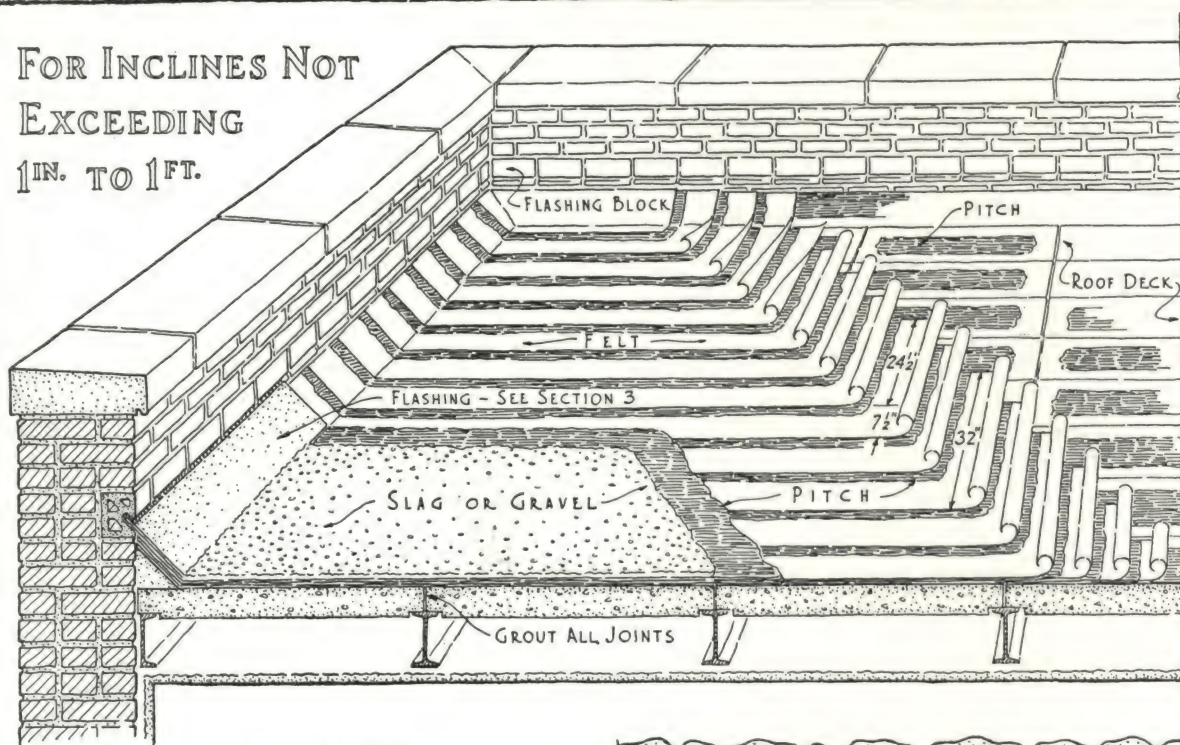
BARRETT SPECIFICATION ROOFS

20 YEAR GUARANTY BOND TYPE 'AA'

FOR USE OVER PRECAST CONCRETE SLABS



FOR INCLINES NOT
EXCEEDING
1 IN. TO 1 FT.



SPECIFICATION

All joints between concrete slabs shall be properly grouted.

The roof deck shall be smooth, firm, dry and free from loose material. If roof deck is inclined, it shall be properly graded to outlets.

First—Spot or strip mop each slab with Barrett Specification Pitch, care being taken that pitch moppings are held back to within four (4) inches from the edge of each joint.

Second—Over the entire surface lay four (4) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-four and one-half (24½) inches, over preceding one, mopping with Barrett Specification Pitch the full twenty-four and one-half (24½) inch lap on each sheet, so that in no place shall Felt touch Felt.

Third—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter (¼) inch to five-eighths (⅝) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than two hundred (200) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degrees Fahrenheit.

The roof shall be applied by a roofing contractor ap-



FULL SIZE SECTION

proved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of twenty (20) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "AA," laid in accordance with the Barrett Specification (for use over precast concrete slabs), by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty (20) years from date of completion, in accordance with Note No. 1 of said specification.

See Section No. 3 for Specifications and Details on Flashings.





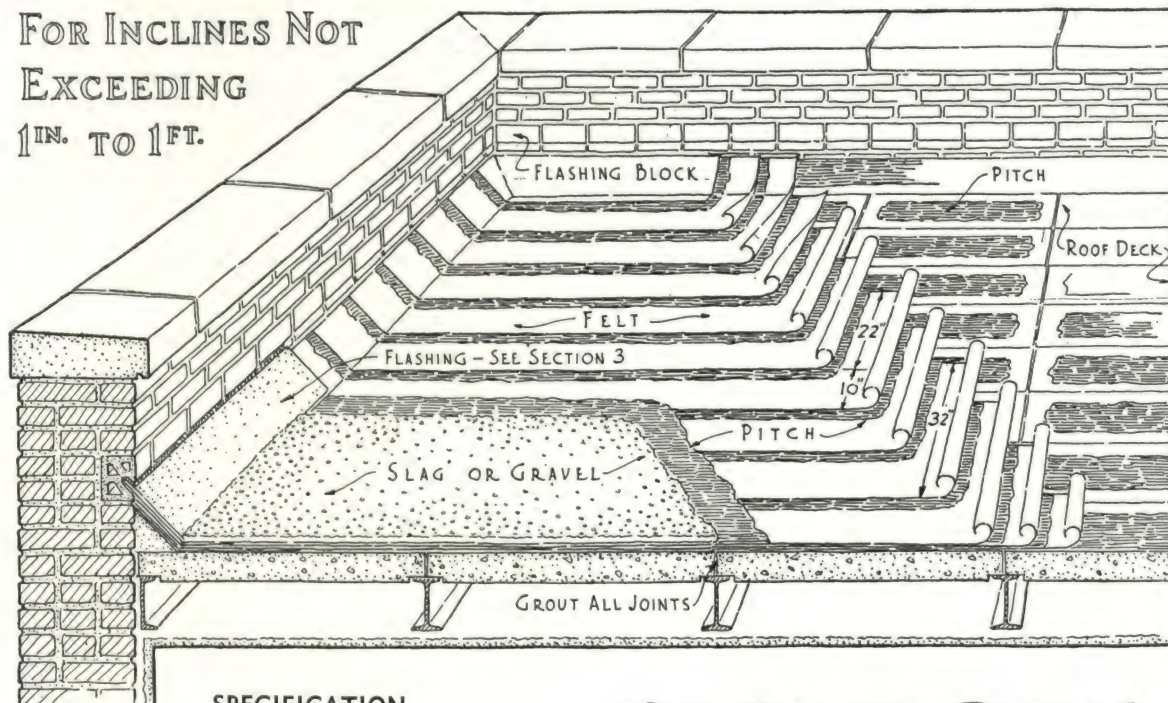
BARRETT SPECIFICATION ROOFS

15 YEAR GUARANTY BOND TYPE "A"

FOR USE OVER PRECAST CONCRETE SLABS



FOR INCLINES NOT
EXCEEDING
1 IN. TO 1 FT.



SPECIFICATION

All joints between concrete slabs shall be properly grouted.

The roof deck shall be smooth, firm, dry and free from loose material. If roof deck is inclined, it shall be properly graded to outlets.

First—Spot or strip mop each slab with Barrett Specification Pitch, care being taken that pitch moppings are held back to within four (4) inches from the edge of each joint.

Second—Over the entire surface lay three (3) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Barrett Specification Pitch the full twenty-two (22) inch lap on each sheet so that in no place shall Felt touch Felt.

Third—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than one hundred and seventy-five (175) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degrees Fahrenheit.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish



FULL SIZE SECTION

THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of fifteen (15) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "A," laid in accordance with the Barrett Specification (for use over precast concrete slabs), by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for fifteen (15) years from date of completion, in accordance with Note No. 1 of said specification.

See Section No. 3 for Specifications and Details on Flashings.

Barrett



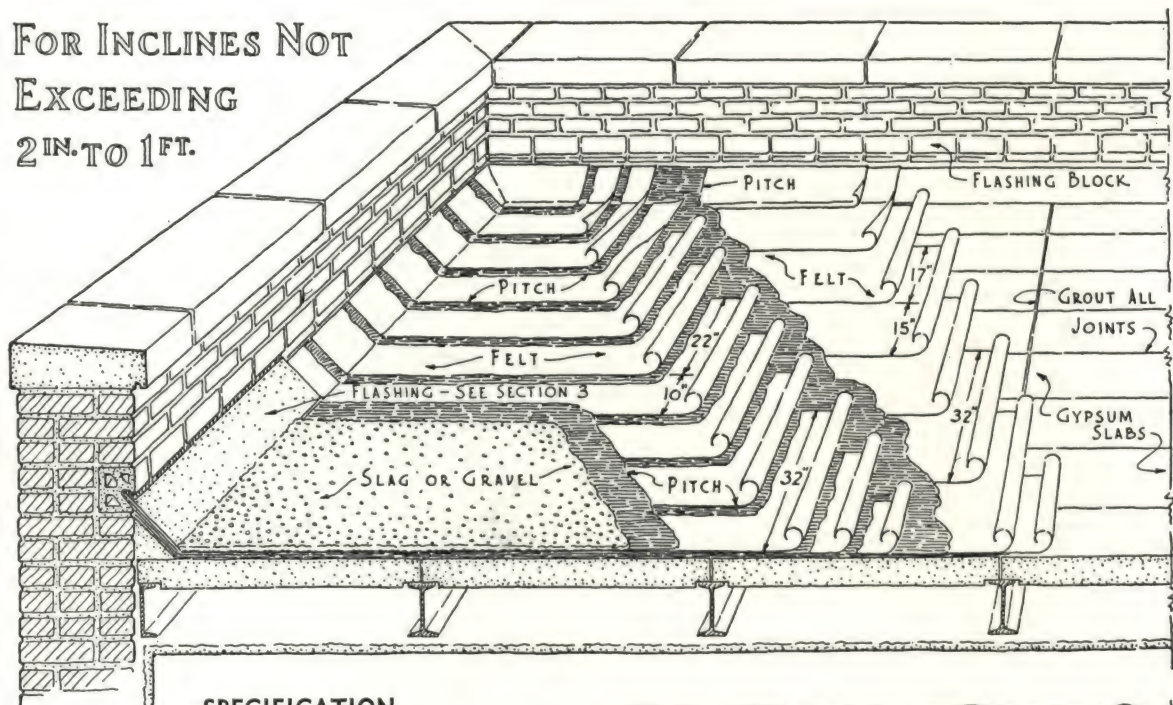
BARRETT SPECIFICATION ROOFS

20 YEAR GUARANTY BOND TYPE "AA"

FOR USE OVER PRECAST GYPSUM SLABS



FOR INCLINES NOT
EXCEEDING
2 IN. TO 1 FT.



SPECIFICATION

All joints between gypsum precast slabs shall be properly grouted.

The roof deck shall be smooth, dry and free from loose material. If roof deck is inclined, it shall be properly graded to outlets.

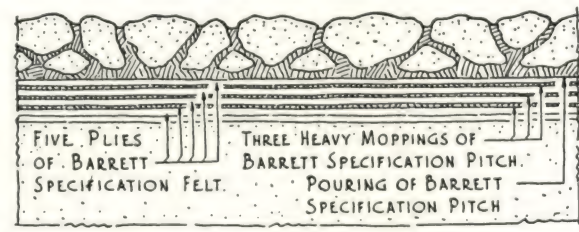
First—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one and nail as often as is necessary to hold in place until remaining Felt is laid.

Second—Coat the entire surface uniformly with Barrett Specification Pitch.

Third—Over the entire surface lay three (3) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Barrett Specification Pitch the full twenty-two (22) inch lap on each sheet so that in no place shall Felt touch Felt. Each sheet shall be nailed six (6) inches from the upper edge, nails to be spaced not more than two (2) feet apart. Nails shall not exceed seven-eighths ($\frac{7}{8}$) inch in length and shall be driven through flat tin disks one (1) inch or more in diameter.

Fourth—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than one hundred and fifty (150) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400)



FULL SIZE SECTION

degrees Fahrenheit.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of twenty (20) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "AA," laid in accordance with the Barrett Specification (for use over precast gypsum slabs), by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty (20) years from date of completion, in accordance with Note No. 1 of said specification.

See Section No. 3 for Specifications and Details on Flashings.

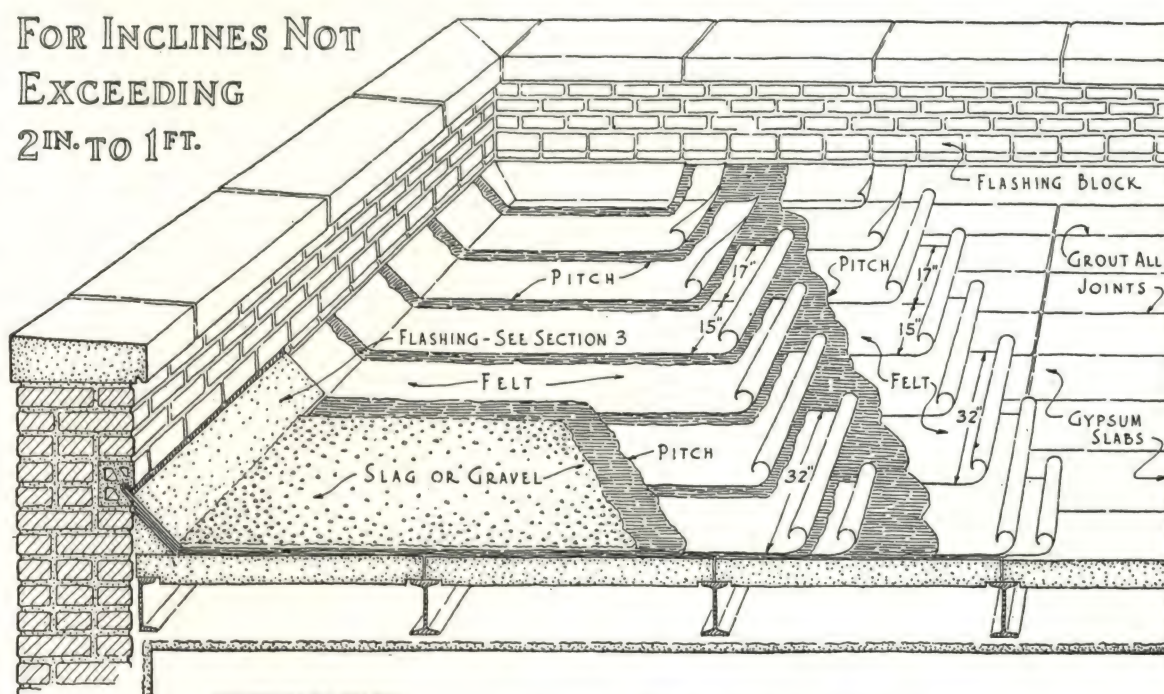


BARRETT SPECIFICATION ROOFS

15 YEAR GUARANTY BOND TYPE 'A'

FOR USE OVER PRECAST GYPSUM SLABS

FOR INCLINES NOT
EXCEEDING
2 IN. TO 1 FT.



SPECIFICATION

All joints between gypsum precast slabs shall be properly grouted.

The roof deck shall be smooth, dry and free from loose material. If roof deck is inclined, it shall be properly graded to outlets.

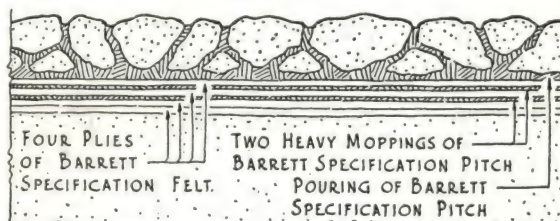
First—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, and nail as often as is necessary to hold in place until remaining Felt is laid.

Second—Coat the entire surface uniformly with Barrett Specification Pitch.

Third—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, mopping with Barrett Specification Pitch the full seventeen (17) inch lap on each sheet so that in no place shall Felt touch Felt. Each sheet shall be nailed six (6) inches from the upper edge, nails to be spaced not more than two (2) feet apart. Nails shall not exceed seven-eighths ($\frac{7}{8}$) inch in length and shall be driven through flat tin disks one (1) inch or more in diameter.

Fourth—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than one hundred and twenty-five (125) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred



FULL SIZE SECTION

(400) degrees Fahrenheit.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of fifteen (15) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "A," laid in accordance with the Barrett Specification (for use over precast gypsum slabs), by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for fifteen (15) years from date of completion, in accordance with Note No. 1 of said specification.

See Section No. 3 for Specifications and Details on Flashings.

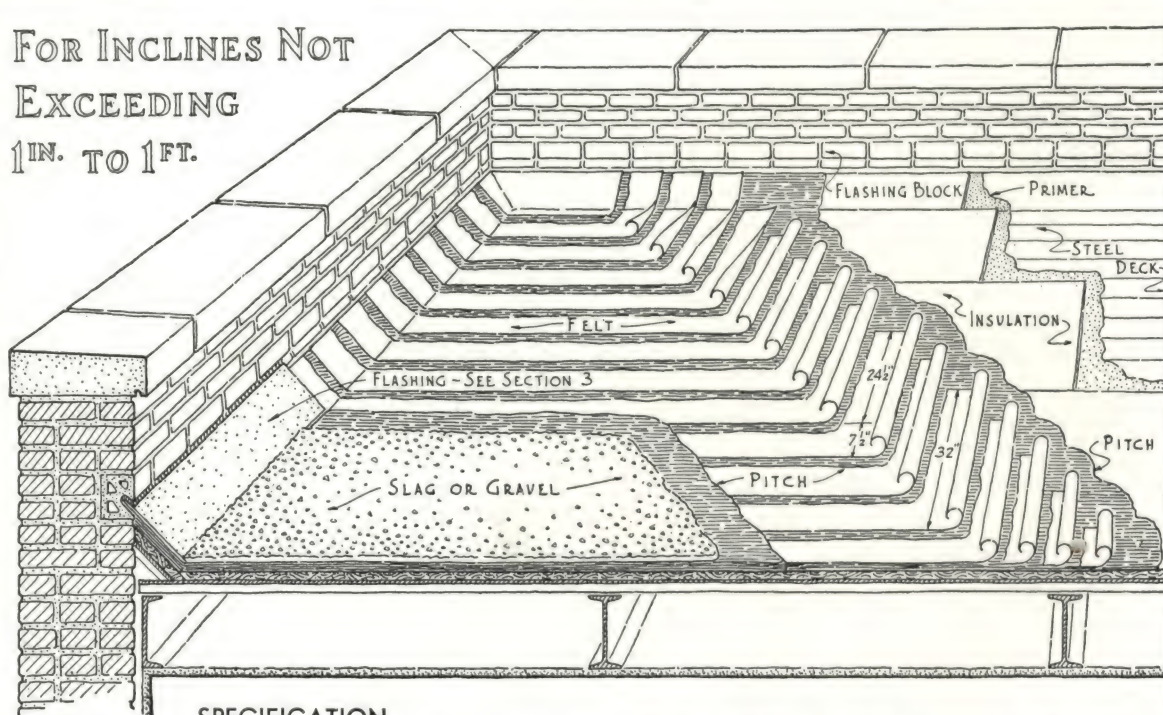
Barrett

BARRETT SPECIFICATION ROOFS

20 YEAR GUARANTY BOND TYPE 'AA'

FOR USE OVER STEEL DECKS

FOR INCLINES NOT
EXCEEDING
1 IN. TO 1 FT.



SPECIFICATION

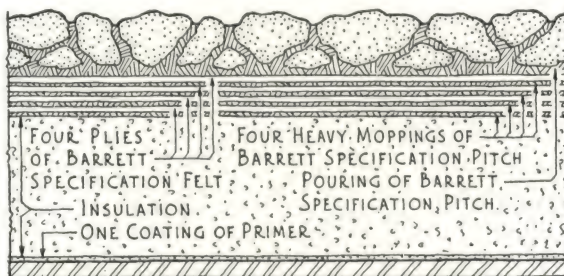
The roof deck shall be smooth, firm, dry and free from rust, grease or loose material. The weather surface shall be factory-primed to receive the roof covering. If roof deck is inclined it shall be properly graded to outlets.

First—Over the entire surface spread a uniform coating of Barrett Anchor Brand Roofing Asphalt into which, while hot, embed approved rigid roof insulation as specified. Insulation shall be kept and applied in a dry condition and shall be firm and free from defects or loose materials. Cut-offs consisting of two (2) plies of Barrett Waterproofing Fabric and three (3) moppings of Barrett Anchor Brand Roofing Asphalt shall be applied every twenty (20) feet, during the application of the insulation, and such cut-offs shall extend at least six (6) inches on roof deck and four (4) inches on top of insulation. No more insulation shall be applied than can be immediately covered with roofing. Care shall be taken that all ends are properly flashed so that at no time shall surface or edges of insulation be exposed.

Second—Coat the entire surface of the insulation with Barrett Specification Pitch.

Third—Over the entire surface lay four (4) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-four and one-half (24½) inches over preceding one, mopping with Barrett Specification Pitch the full twenty-four and one-half (24½) inch lap, so that in no place shall Felt touch Felt. Each sheet shall be nailed three (3) inches from upper edge, with soft nosed nails of sufficient length to extend through the insulation and clinch. Nails to be spaced not more than two (2) feet apart.

Fourth—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, in which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter (¼) inch to five-



eighths (⅝) inch in size, dry and free from dirt.

General—The Felt shall be laid without wrinkles or buckles. Not less than two hundred (200) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degrees F.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of twenty (20) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof Type "AA," laid in accordance with the Barrett Specification for use over steel roof decks, by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty (20) years from date of completion in accordance with Note No. 1 of said specification.

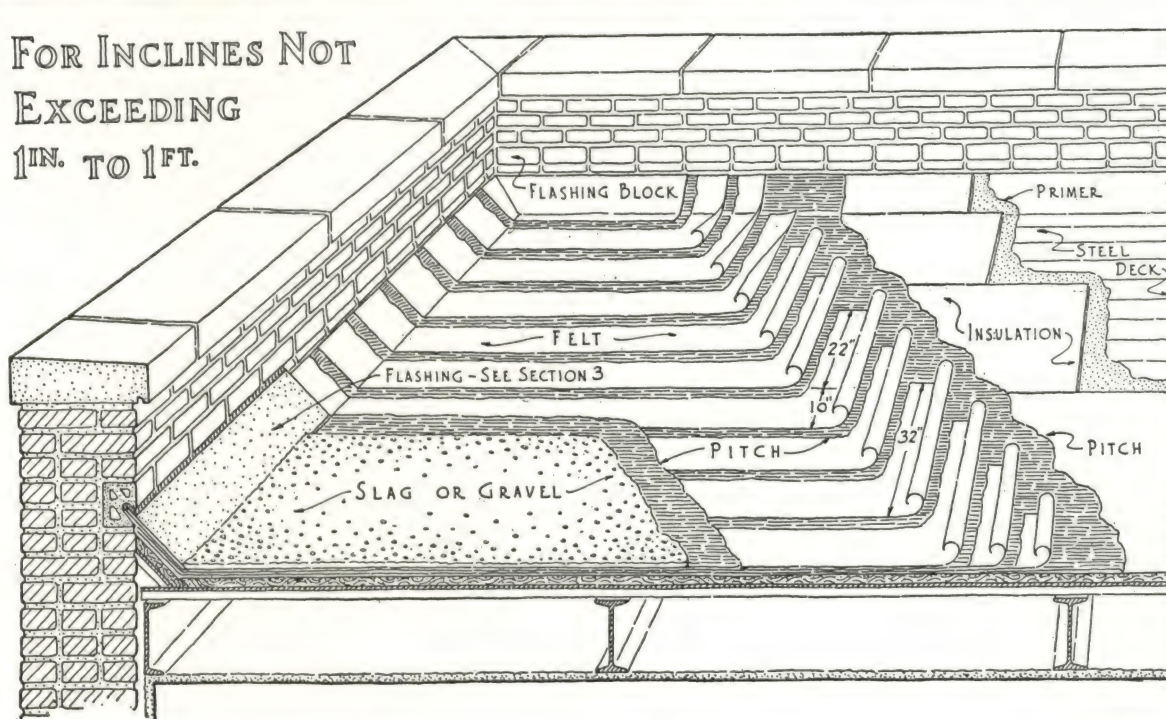
Barrett

BARRETT SPECIFICATION ROOFS

15 YEAR GUARANTY BOND TYPE 'A'

FOR USE OVER STEEL DECKS

FOR INCLINES NOT
EXCEEDING
1IN. TO 1FT.



SPECIFICATION

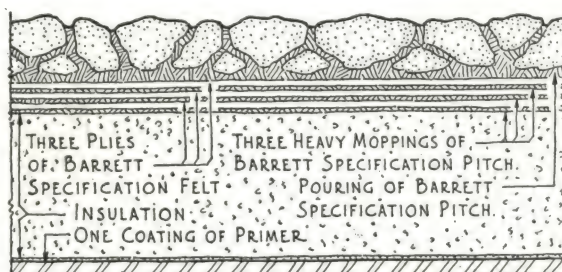
The roof deck shall be smooth, firm, dry and free from rust, grease, or loose material. The weather surface shall be factory-primed to receive the roof covering. If roof deck is inclined it shall be properly graded to outlets.

First—Over the entire surface spread a uniform coating of Barrett Anchor Brand Roofing Asphalt into which, while hot, embed approved rigid roof insulation as specified. Insulation shall be kept and applied in a dry condition and shall be firm and free from defects or loose materials. Cut-offs consisting of two (2) plies of Barrett Waterproofing Fabric and three (3) moppings of Barrett Anchor Brand Roofing Asphalt shall be applied every twenty (20) feet, during the application of the insulation, and such cut-offs shall extend at least six (6) inches on roof deck and four (4) inches on top of insulation. No more insulation shall be applied than can be immediately covered with roofing. Care shall be taken that ends are properly flashed so that at no time shall surface or edges of insulation be exposed.

Second—Coat the entire surface of the insulation with Barrett Specification Pitch.

Third—Over the entire surface lay three (3) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Barrett Specification Pitch the full twenty-two (22) inch lap, so that in no place shall felt touch felt. Each sheet shall be nailed three (3) inches from the upper edge with soft-nosed nails of sufficient length to extend through the insulation and clinch. Nails to be spaced not more than two (2) feet apart.

Fourth—Over the entire surface pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter ($\frac{1}{4}$) inch to



five-eighths ($\frac{5}{8}$) inch in size, dry and free from dirt.

General—The felt shall be laid without wrinkles or buckles. Not less than one hundred and seventy-five (175) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degrees F.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of fifteen (15) years from date of completion, in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs of five thousand (5000) square feet or more in the United States and Canada where its inspection service is available, provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval.

Condensed Specification

Roofing—Shall be a Barrett Specification Roof, Type "A," laid in accordance with the Barrett Specification for use over steel roof decks, by a roofing contractor approved by THE BARRETT COMPANY. The roofing contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for fifteen (15) years from date of completion in accordance with Note No. 1 of said specification.

Barrett



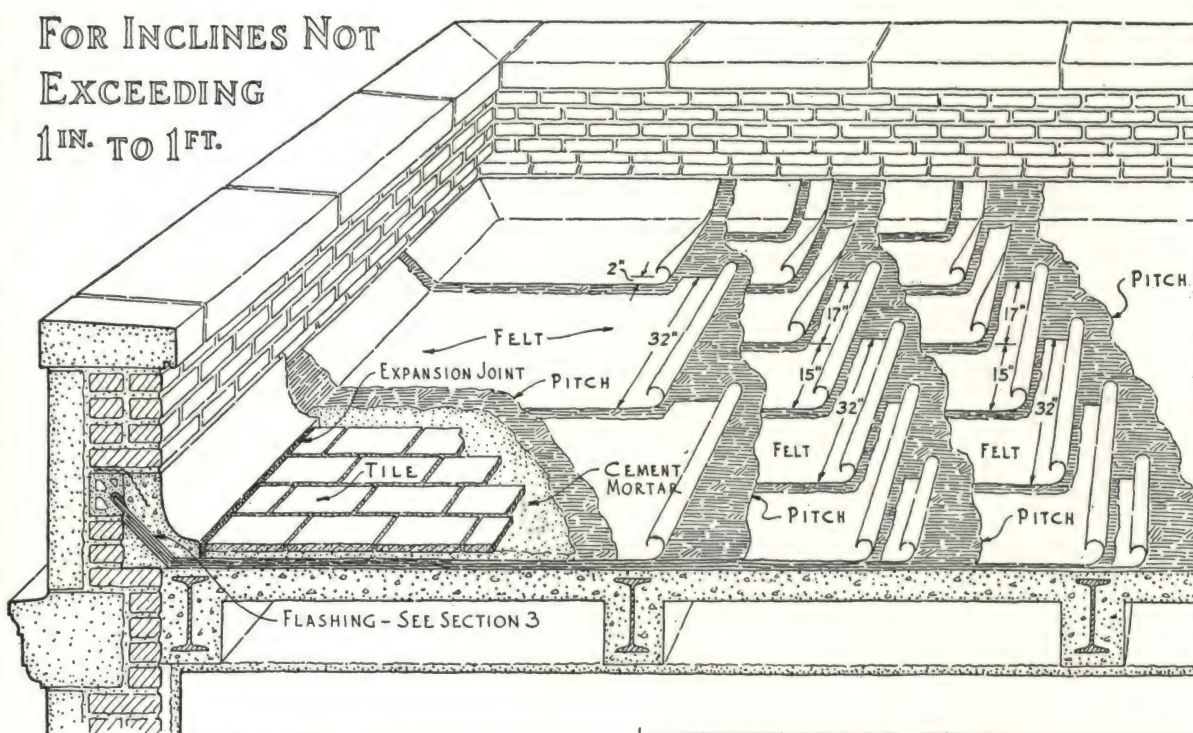
BARRETT SPECIFICATION ROOFS

5-PLY OVER CONCRETE

FOR USE UNDER PROMENADE TILE



FOR INCLINES NOT
EXCEEDING
1 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be smooth, firm, dry, properly graded to outlets, and free from loose material.

First—Coat the concrete uniformly with Specification Pitch.

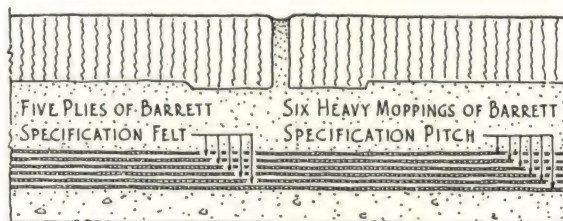
Second—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, mopping with Barrett Specification Pitch the full seventeen (17) inch lap on each sheet, so that in no place shall Felt touch Felt.

Third—Coat the entire surface uniformly with Barrett Specification Pitch.

Fourth—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, mopping with Barrett Specification Pitch the full seventeen (17) inch lap on each sheet, so that in no place shall Felt touch Felt.

Fifth—Immediately preceding the laying of the tile, thoroughly clean the surface of the roof and mop same with Barrett Specification Pitch, into which, while hot, embed one (1) layer of Specification Felt, lapping each sheet two (2) inches over preceding one. Over this surface and immediately preceding the laying of the tile spread a heavy uniform coating of Barrett Specification Pitch. No more of the roof surface shall be covered with the final or last ply of Felt and mopping of Pitch than is covered at the same time with tile and is necessary to allow for proper connections.

Over the Felt and Pitch roofing thus laid, 1 x 6 x 9-inch vitrified clay tile (approved by the architect) shall be set in not less than three-fourths ($\frac{3}{4}$) inch of Portland cement mortar (1 to 3 mix) and joints grouted full with Portland cement mortar (1 to 2 mix). The



HALF FULL SIZE SECTION

tile shall be laid to show three-sixteenths ($\frac{3}{16}$) inch to one-fourth ($\frac{1}{4}$) inch joints. Expansion joints three-fourths ($\frac{3}{4}$) inch wide filled with a plastic mixture (approved by the architect) shall be provided between the tile and all flashings, and either metal or mastic expansion joints shall be provided throughout the roof surface as may be necessary to take care of expansion. All expansion joints shall extend from the top of the tile through the cement mortar to the Felt and Pitch waterproofing and in no case shall expansion joints be spaced more than twenty (20) feet apart.

General—The Felt shall be laid without wrinkles or buckles. Not less than two hundred (200) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degrees Fahrenheit. The roofing contract shall be awarded to a roofing contractor, approved by THE BARRETT COMPANY, who has had experience in this kind of work, and who can refer to similar installations where his work has proved satisfactory.

See Section No. 3 for Specifications and Details on Flashing.

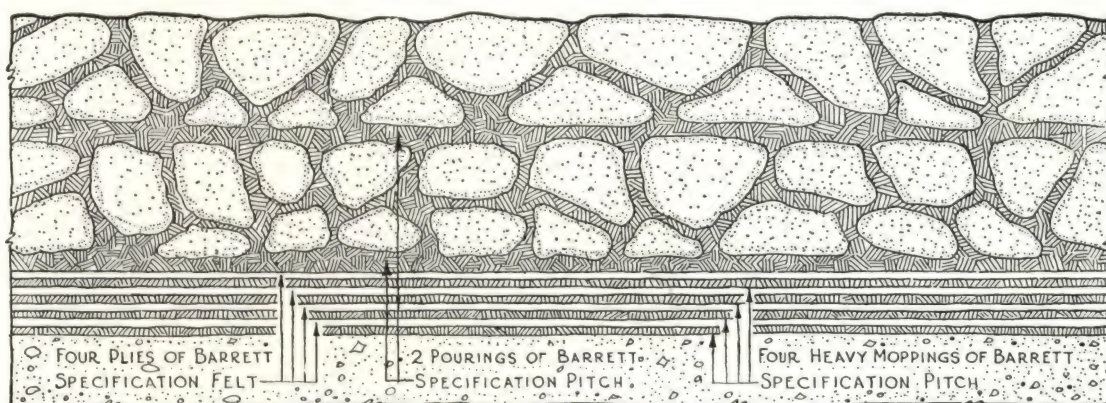
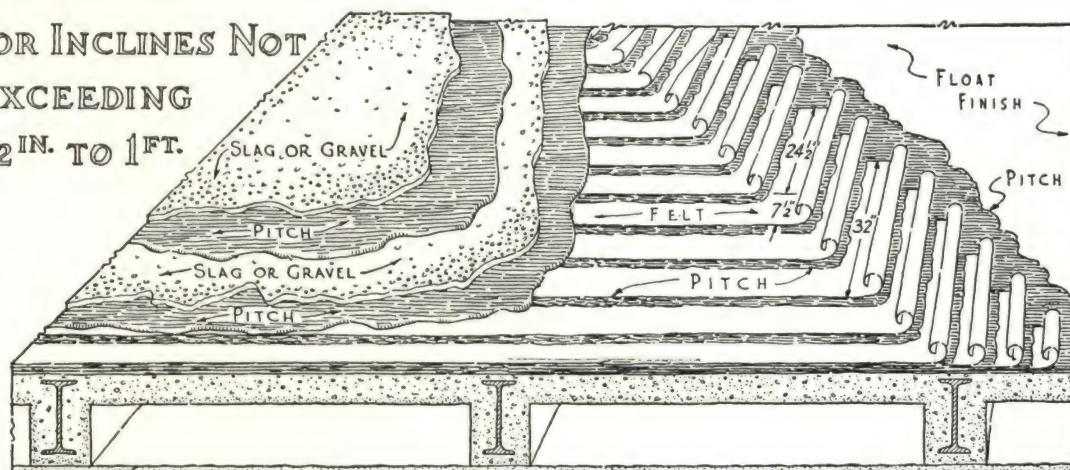
Barrett

BARRETT SPECIFICATION ROOFS

4-PLY OVER CONCRETE-DOUBLE SURFACING

FOR UTILITY OR SPRAY POND SERVICE

FOR INCLINES NOT
EXCEEDING
1/2 IN. TO 1 FT.



FULL SIZE SECTION

SPECIFICATION

The roof deck shall be smooth, firm, dry, properly graded to outlets, and free from loose material.

First—Coat the concrete uniformly with Barrett Specification Pitch.

Second—Over the entire surface lay four (4) plies of Barrett Specification Tarred Felt, lapping each sheet twenty-four and one-half (24½) inches over preceding one, mopping with Barrett Specification Pitch the full twenty-four and one-half (24½) inch lap on each sheet, so that in no place shall Felt touch Felt. Only such nailing as is necessary shall be done along upper edge of each sheet so that all nails shall be covered by not less than three (3) plies of felt.

Third—Immediately preceding the application of surfacing material, thoroughly clean the surface of the roofing, after which over the entire surface, pour from a dipper a uniform coating of Barrett Specification Pitch, into which, while hot, embed not less than four hundred (400) pounds of gravel, or three hundred (300) pounds of slag for each one hundred (100) square feet.

Fourth—Remove all loose or excess gravel or slag by slightly sweeping all surfaces and immediately follow with hot pouring of Barrett Specification Pitch, applied to all surfaces, into which, while hot, embed not less than three hundred (300) pounds of gravel, or two hundred (200) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be from one-quarter (¼) to five-eighths (⅝) inch in size, dry and free from dirt. All gravel or slag shall be firmly embedded in Pitch so that no loose particles appear in finished job. The finished surface may be lightly rolled if necessary.

General—The Felt shall be laid without wrinkles or buckles. Not less than three hundred (300) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed roof, and the Pitch shall not be heated above four hundred (400) degrees F.

The roofing contract shall be awarded to a roofing contractor, approved by THE BARRETT COMPANY, who has had experience in this kind of work, and can refer to similar installations where his work has proved satisfactory.

Barrett



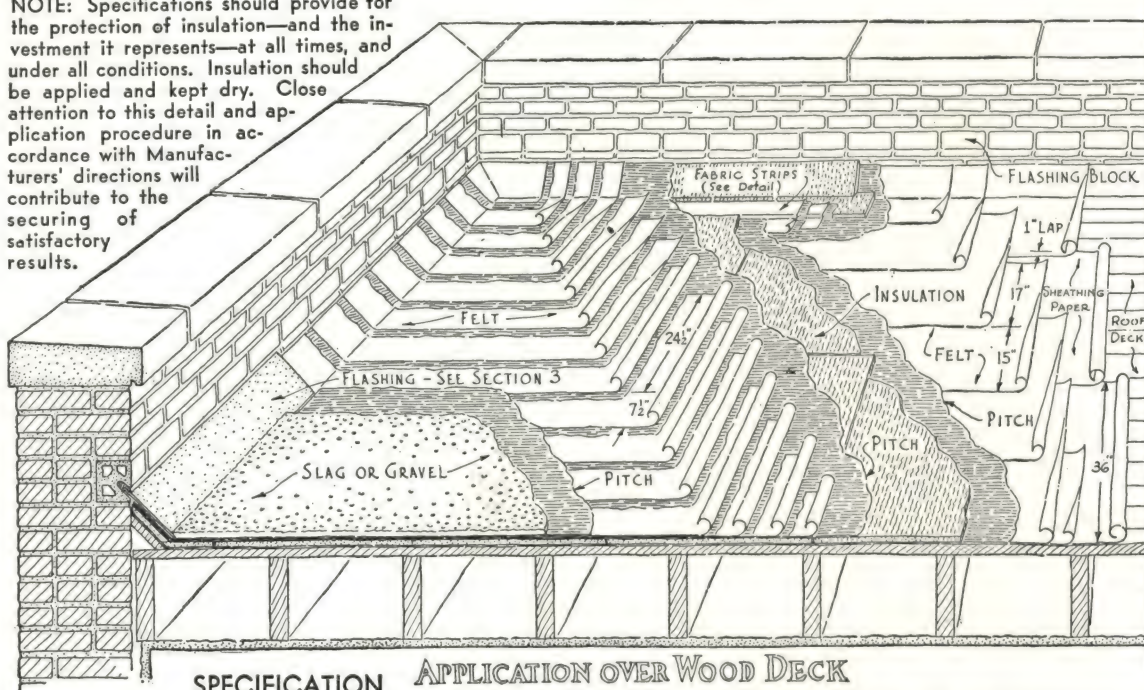
BARRETT SPECIFICATION ROOFS

TYPE "A-A" OR TYPE "A"

DETAILS FOR USE OVER RIGID INSULATION



NOTE: Specifications should provide for the protection of insulation—and the investment it represents—at all times, and under all conditions. Insulation should be applied and kept dry. Close attention to this detail and application procedure in accordance with Manufacturers' directions will contribute to the securing of satisfactory results.



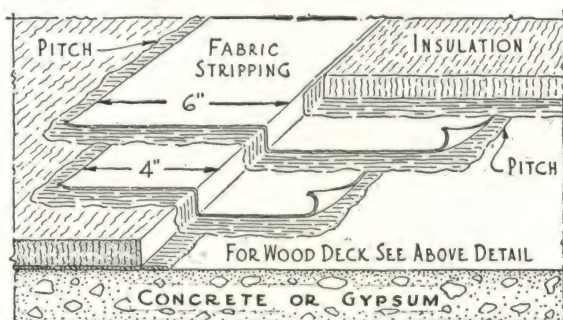
SPECIFICATION APPLICATION OVER WOOD DECK

ON WOOD ROOF DECKS, the installation of a waterproofing course, over which the insulation is applied, provides protection against moisture or deterioration from below. The waterproofing course should be of 2-ply construction; i.e., one layer of Rosin-sized sheathing and 2 plies of tarred felt, each sheet lapped 17 inches over preceding one, and nailed along lower edge sufficiently to hold in place. All nails should be driven through flat tin discs and should not extend to under side of deck. The entire surface of the waterproofing course should then be coated with a uniform mopping of pitch into which, while hot, the insulation is laid. OVER PRECAST SLABS, Rosin-sized sheathing may be omitted.

ON MONOLITHIC CONCRETE OR GYPSUM DECKS, the waterproofing course, consisting of two layers of tarred felt, is applied directly and fully to the roof deck. The felts should be stuck solidly to the deck, and together, with a uniform coating of hot pitch and the installation laid in a hot mopping of pitch applied to the surface of the two-ply membrane. The roof deck in all cases shall be smooth, firm, free from loose materials, and shall be DRY.

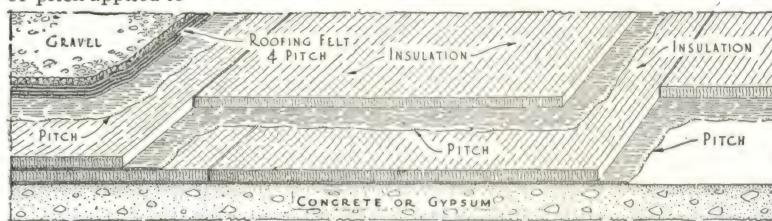
OVER INSULATION, and where base-protection course is provided, all roofing shall be solid-mopped. (For specifications refer to pages 18 and 19.) Water cut-offs, consisting of 2 plies of Barrett Waterproofing Fabric and alternating moppings of pitch shall be installed at all edges of insulation adjoining parapet walls, curbs, or other vertical surfaces. Supplementary and continuous cut-offs of similar construction shall be installed approximately every 25 feet in each direction during application of insulation.

Note: 1—Where multiple layers of insulation are installed, each succeeding layer shall break joints with underlying layer and shall be set in mopping of pitch.



APPLICATION DETAIL FOR ONE LAYER OF INSULATION.

METHOD OF INSTALLING WATER CUT-OFF



APPLICATION DETAIL FOR MULTIPLE LAYERS OF INSULATION

Note—2. Insulation shall be immediately covered with roofing and edges shall be stripped and sealed after each day's work.

Barrett

SECTION 2

Steep Roof Specifications and Details

ROOFs having inclines in excess of two inches in one foot are generally classified as steep roofs.

Such roofs are not ordinarily required to hold rain water, slush, ice and snow for protracted periods. They are, however, subjected to longer periods of exposure to the harmful actinic rays of the sun, and should be constructed so as to provide complete protection under all prevailing conditions.

Great care in construction and exacting inspection are desirable in steep roof work. The use of the proper materials and the proper application thereof are of paramount importance. Materials used in the construction of Barrett Built-Up roofs for steep surfaces are particularly suited to the requirements involved. Applied, they form a continuous waterproofing membrane which will

not slide or rupture under normal deck stress or strain.

Under no circumstances should membrane coverings be left unprotected or exposed to the weather. For this reason, consistent with Barrett's policy of providing the most durable weathering surface, Barrett's steep roof construction is protected by crushed slag or gravel, or by mineralized aggregate obtainable in a variety of colors.

Barrett's approved roofing organization is skilled in the application of steep roof construction, and can be relied upon to handle this type of work with the same degree of efficiency as is obtained on all Barrett Specification work.

The following specifications are recommended for use under the specific conditions as outlined.

258th
Field Artillery
Armory
New York, N. Y.



A Typical
Barrett
Steep Roof
Application



Industrial Rayon Corporation, Covington, Ky.
Barrett Specification Roofed



National Biscuit Company, Beacon, N. Y.
Barrett Specification Roofed

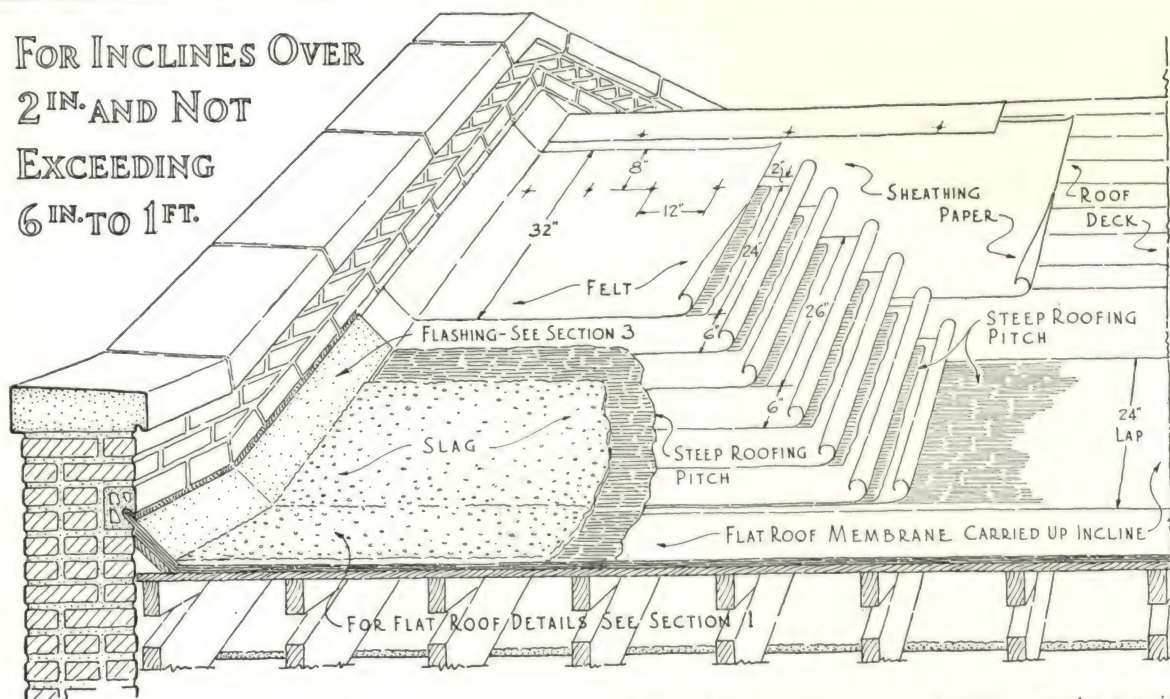


BARRETT SPECIAL STEEP ROOFS

20 YEAR GUARANTY BOND - 5 PLY
FOR USE OVER WOOD



FOR INCLINES OVER
2 IN. AND NOT
EXCEEDING
6 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be of seasoned lumber, smooth and free from loose boards, large cracks or knot-holes, and shall be firm, and free from loose material.

First—Lay one thickness of sheathing paper or unsaturated felt weighing not less than 5 lbs. per 100 sq. ft., lapping the sheet at least one inch. The sheathing paper shall be nailed sufficiently to hold it in place during application of the roofing.

Second—Over the entire surface lay five (5) plies of Barrett Specification Tarred Felt at right angles to the incline of the roof, lapping each sheet twenty-six (26) inches over preceding one. Each sheet shall be nailed with one inch barbed roofing nails through flat tin discs, eight (8) inches from the upper edge and nails shall be spaced not more than one foot apart.

Third—Mop back on each sheet for a distance of twenty-four (24) inches with Barrett Steep Roofing Pitch. The Felt shall follow and shall be firmly embedded into the hot moppings as applied. Care shall be taken that the Pitch moppings are even with lower edge of each overlying sheet, and that the finished Felt surface is free and clean of Pitch drippage.

Fourth—Over the entire surface, spread with a mop a uniform coating of Barrett Steep Roofing Pitch into which, while hot, firmly embed not less than 250 lbs. of slag for each 100 sq. ft. of finished roofing. The slag shall be from one-quarter to five-eighths inch in size, shall be dry and free from dirt, and shall be embedded into the surface mopping immediately. If roofing is applied during cool weather, or slag is damp, slag shall be heated and dried, so that it is warm when applied to the roof. The slag surfacing shall be continuous and shall cover and shall be firmly embedded into the surface coating.

General—Felt shall be laid without wrinkles or buckles. Not less than 80 lbs. of Pitch shall be used for constructing the membrane, and not less than 50 lbs. nor more than 60 lbs. of Pitch shall be used for embedding the slag in constructing each 100 sq. ft. of completed roof. The Pitch shall not be heated above 400° F. nor shall it be applied to the roof below 350° F.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the inclined surfaces, not less than 24 inches before the application of the Steep Roofing.

The roof shall be applied by a Roofing Contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the United States

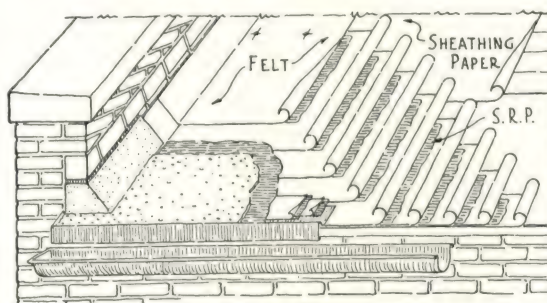
Fidelity & Guaranty Company of Baltimore, covering a period of twenty years from date of completion in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will issue its Guaranty Bond on jobs in the United States, where its inspection service is available, provided the roof is applied by a Roofing Contractor approved by THE BARRETT COMPANY in strict accordance with the above specification, and subject to Barrett Inspection and approval under the following conditions:

- That the steep roof area shall be roofed in conjunction with the flat roof area.
- That the flat roof area shall be covered with a Barrett Specification, Type "AA" or Type "A" roof.

Condensed Specification

Roofing—Shall be a Barrett Specification Steep Roof Type "AA," and shall be laid in accordance with the Barrett Specification, for use over boards on steep surfaces, by a Roofing Contractor approved by THE BARRETT COMPANY. The Roofing Contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty years from date of completion, in accordance with Note 1 of said specification.



METHOD OF STARTING AT EAVES

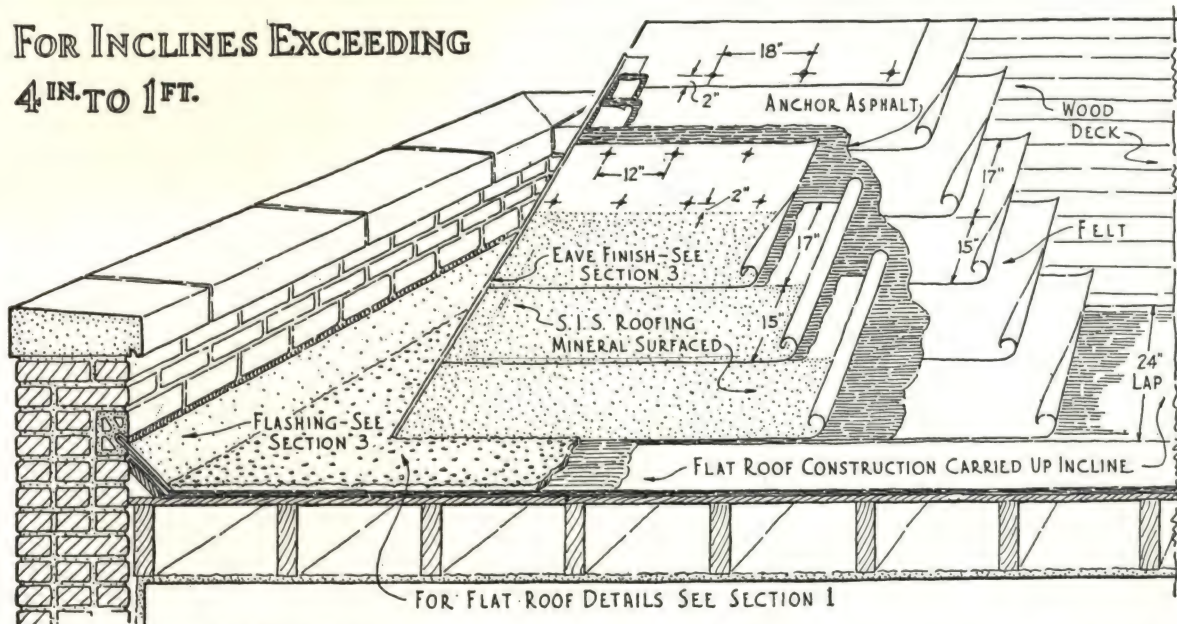
Barrett

BARRETT SPECIAL STEEP ROOFS

S.I.S. TYPE 10 YEAR GUARANTY BOND

FOR USE OVER WOOD

FOR INCLINES EXCEEDING
4 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be of seasoned lumber, smooth and free from loose boards, large cracks or knot holes, and free from loose material.

First—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt at right angles to the incline of the roof, lapping each sheet seventeen (17) inches over preceding one. Each sheet shall be nailed two (2) inches from the lower edge with barbed roofing nails, through flat tin disks, spacing the nails not more than eighteen (18) inches apart.

Second—Over the entire surface spread with a mop a uniform coating of Barrett Anchor Brand Roofing Asphalt, into which, while hot, shall be immediately rolled Barrett S. I. S. Roofing laid at right angles to the incline of the roof, lapping the sheets the full width of the seventeen (17) inch selvage. All sheets of Barrett S. I. S. Roofing shall be securely fastened in place with a double course of one (1) inch barbed roofing nails driven through flat tin disks, and placed along the selvage side of the sheet. Nailing courses to be staggered and nails to be spaced not more than twelve (12) inches apart. The lower nailing course shall be held back two (2) inches from the mineral surfacing.

Third—Spread over the entire surface of the seventeen (17) inch selvage a uniform mopping of Barrett Anchor Brand Roofing Asphalt, into which, while hot, shall be immediately rolled the following sheet of Barrett S. I. S. Roofing.

Fourth—All end laps shall be over-lapped at least six (6) inches. The underlying sheet of each end lap shall be nailed with six (6) nails through flat tin disks spaced five (5) inches apart starting one (1) inch from the lower edge of the sheet. The six (6) inch lap shall be coated with Barrett Anchor Brand Roofing Asphalt and the over-lapping sheet thoroughly pressed down.

Fifth—The Barrett S. I. S. Roofing shall be cut in strips not to exceed twenty (20) feet in length and shall be stacked flat in piles at least twenty-four (24) hours before using.

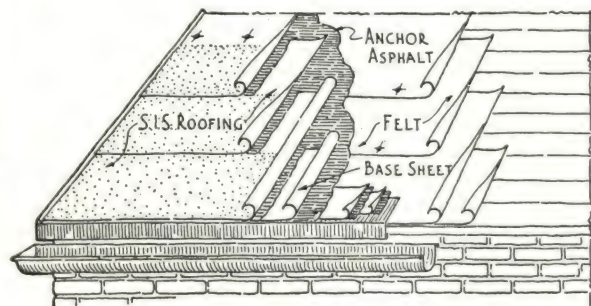
General—The felt and S. I. S. Roofing shall be laid without wrinkles or buckles. Not less than fifty (50) pounds of Barrett Anchor Brand Roofing Asphalt shall be used for constructing each one hundred (100) square feet of completed roof.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the inclined surfaces not less than twenty-four (24) inches before the application of the steep roofing.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity and Guaranty Company of Baltimore, covering a period of ten (10) years from date of completion in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs in the United States and Canada where its inspection service is available provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval under the following conditions:

- That the steep roof area shall be roofed in conjunction with the flat roof area.
- That the flat roof area shall be covered with a Barrett Specification Type "A" or Type "AA" roof.



METHOD OF STARTING AT EAVES

Barrett



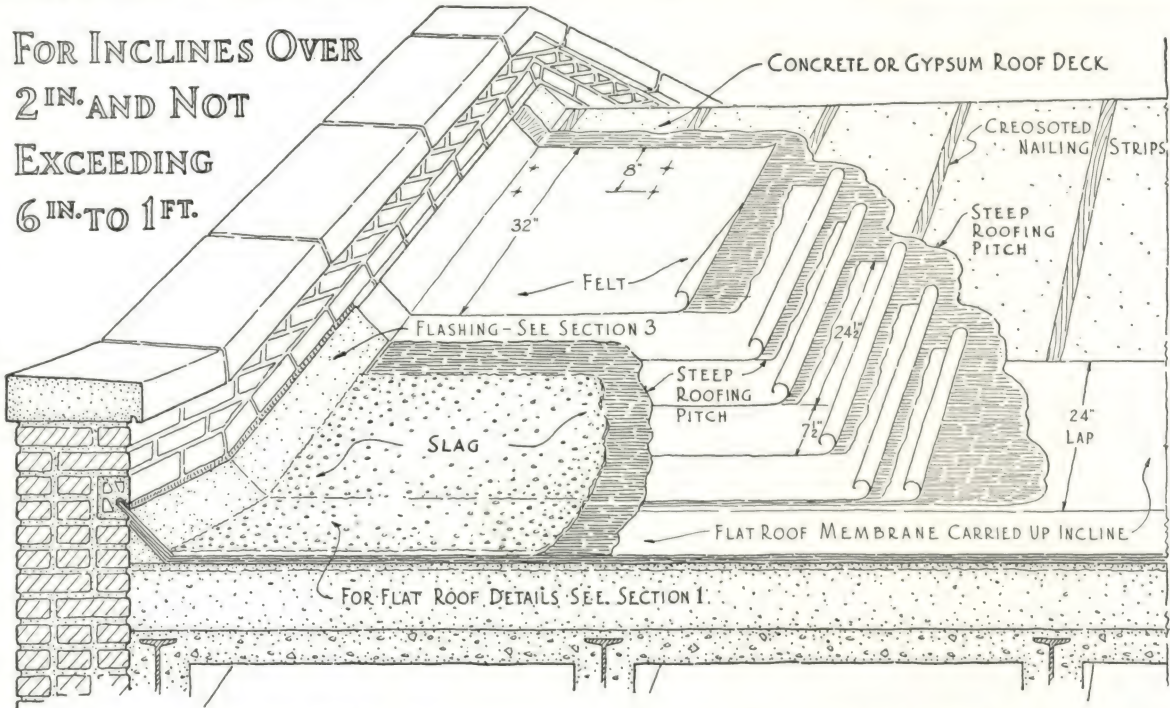
BARRETT SPECIAL STEEP ROOFS

20 YEAR GUARANTY BOND - 4 PLY

FOR USE OVER POURED CONCRETE OR GYPSUM



FOR INCLINES OVER
2 IN. AND NOT
EXCEEDING
6 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be smooth, firm, dry and free from loose material. The concrete or gypsum shall permit of nailing or creosoted wooden nailing strips shall be provided. Where nailing strips are provided, they shall be laid parallel with the incline of the roof and shall be spaced not more than three feet apart.

First—Coat the roof deck uniformly with Barrett Steep Roofing Pitch.

Second—Over the entire surface lay four plies of Barrett Specification Tarrd Felt at right angles to the incline of the roof, lapping each sheet twenty-four and one-half inches over preceding one. Each sheet shall be nailed with one inch barbed roofing nails through flat tin discs, eight inches from the upper edge, and nails shall be spaced not more than one foot apart. Where nailing strips are used, the Felt shall be nailed with two nails through flat tin discs (at each nailing strip) placed six inches and eight inches respectively from the upper edge of each sheet.

Third—Mop back on each sheet the full distance of the twenty-four and one-half inch lap with Barrett Steep Roofing Pitch. The Felt shall follow and shall be firmly embedded into the hot moppings as applied. Care shall be taken that pitch moppings are even with lower edge of each overlying sheet and that the finished Felt surface is clean and free from pitch drip.

Fourth—Over the entire surface spread with a mop a uniform coating of Barrett Steep Roofing Pitch, into which, while hot, firmly embed not less than 250 lbs. of slag for each 100 sq. ft. of finished roofing. The slag shall be from one-quarter to five-eighths inch in size, shall be dry and free from dirt, and shall be embedded into the surface mopping immediately. If roofing is applied during cool weather, or slag is damp, slag shall be heated and dried, so that it is warm when applied to the roof. The slag surfacing shall be continuous, and shall cover and shall be firmly embedded in the surface coating.

General—Felt shall be laid without wrinkles or buckles. Not less than 100 lbs. of Pitch shall be used for constructing the membrane and not less than 50 lbs. nor more than 60 lbs. of Pitch shall be used for embedding the slag in constructing each 100 sq. ft. of completed roof. The Pitch shall not be heated above 400° F. and shall not be applied to the roof below 350° F.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the inclined surfaces not less than 24 inches before the application of the Steep Roofing.

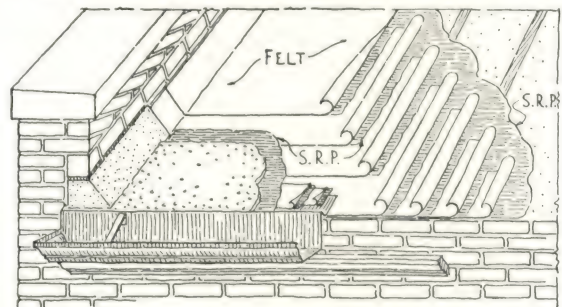
The roof shall be applied by a Roofing Contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the United States Fidelity & Guaranty Company of Baltimore, covering a period of twenty years from date of completion in accordance with Note No. 1.

Note No. 1—THE BARRETT COMPANY will issue its Guaranty Bond on jobs in the United States where its inspection service is available provided the roof is applied by a Roofing Contractor approved by THE BARRETT COMPANY in strict accordance with the above specification, and subject to Barrett inspection and approval under the following conditions:

- That the steep roof area be roofed in conjunction with the flat roof area.
- That the flat roof area shall be covered with a Barrett Specification, Type "AA," or Type "A" roof.

Condensed Specification

Roofing—Shall be a Barrett Specification Steep Roof Type "AA," and shall be laid in accordance with the Barrett Specification, for use over poured concrete or gypsum on steep surfaces by a Roofing Contractor approved by THE BARRETT COMPANY. The Roofing Contractor shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty for twenty years from date of completion, in accordance with Note 1 of said specification.



METHOD OF STARTING AT EAVES

Barrett

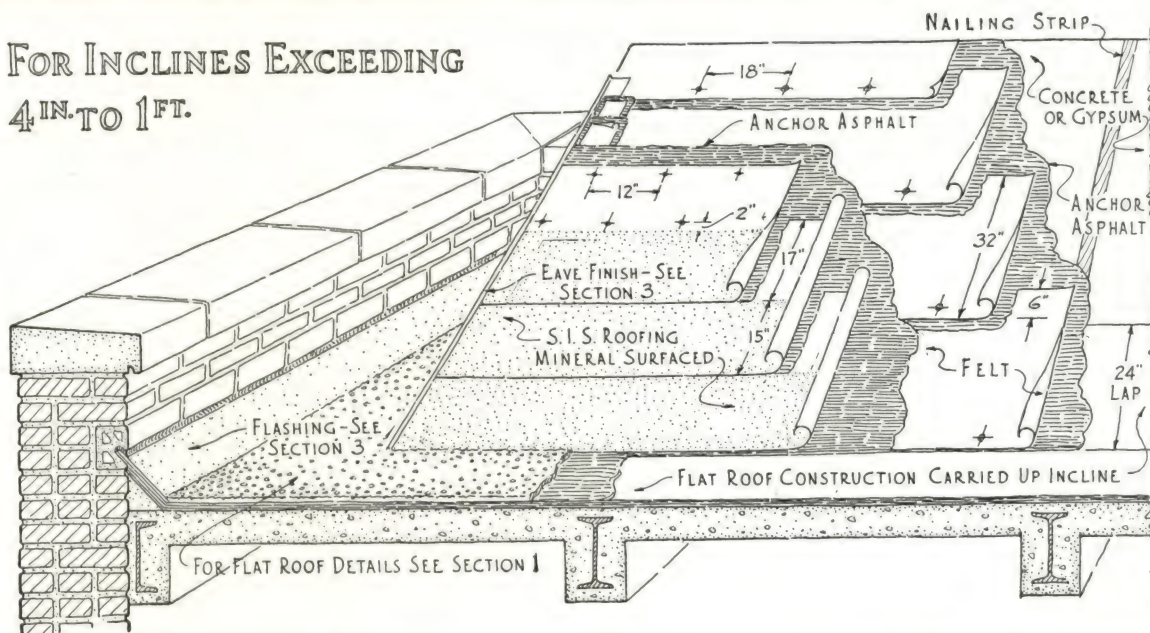


BARRETT SPECIAL STEEP ROOFS

S.I.S. TYPE - 10 YEAR GUARANTY BOND
FOR USE OVER POURED CONCRETE or GYPSUM



FOR INCLINES EXCEEDING
4 IN. TO 1 FT.



SPECIFICATION

The roof deck shall be smooth, firm, dry and free from loose material. The concrete or gypsum shall permit of nailing or creosoted wooden nailing strips shall be provided. If nailing strips are provided, they shall be laid parallel with the incline of the roof and shall be spaced not more than three (3) feet apart.

First—The surface of the roof deck shall be given a priming coat of Barrett Crystal Asphalt Primer. The priming coat shall be allowed to dry for not less than six (6) hours before the application of the roofing.

Second—Over the roof deck spread with a mop a uniform coating of Barrett Anchor Brand Roofing Asphalt, into which, while hot, shall be immediately embedded one (1) ply of Barrett Specification Tarred Felt, laid at right angles to the incline of the roof, lapping each sheet six (6) inches over preceding one. The six (6) inch over-lap shall be thoroughly cemented together with Barrett Anchor Brand Roofing Asphalt. The felt shall be nailed two (2) inches from the lower edge of each sheet, with barbed roofing nails through flat tin disks, spaced not more than eighteen (18) inches apart.

Third—Over the entire surface spread a uniform mopped coating of Barrett Anchor Brand Roofing Asphalt, into which, while hot, shall be immediately rolled Barrett S. I. S. Roofing laid at right angles to incline of roof, lapping the sheets the full width of the seventeen (17) inch selvage. All sheets of S. I. S. Roofing shall be securely fastened in place with a double course of one (1) inch barbed roofing nails driven through flat tin disks, and placed along the selvage side of sheet. Nailing courses to be staggered and nails spaced not more than twelve (12) inches apart. Lower nailing course shall be held back two (2) inches from the mineral surfacing.

Fourth—Spread over the entire surface of the seventeen (17) inch selvage, a uniform mopping of Barrett Anchor Brand Roofing Asphalt, into which shall be immediately rolled the following sheet of S. I. S. Roofing.

Fifth—All end laps shall be over-lapped at least six (6) inches. The underlying sheet of each end lap shall

be nailed along end of sheet with six (6) nails through flat tin disks spaced evenly. The six (6) inch lap shall be coated with Barrett Anchor Brand Roofing Asphalt and the over-lapping sheet thoroughly pressed down.

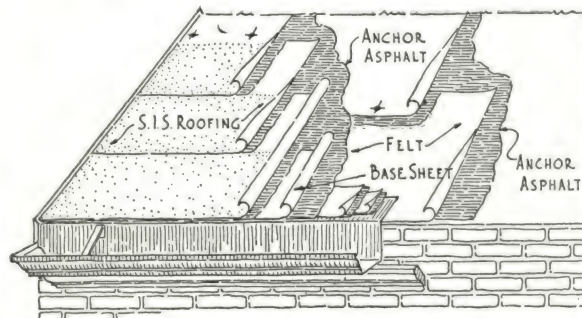
Sixth—S. I. S. Roofing shall be cut in strips not to exceed twenty (20) feet in length and shall be stacked flat in piles at least twenty-four (24) hours before using.

General—The felt and S. I. S. Roofing shall be laid without wrinkles or buckles. Not less than one hundred (100) pounds of Barrett Anchor Brand Roofing Asphalt shall be used for constructing each one hundred (100) square feet of completed roof. Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the inclined surfaces not less than twenty-four (24) inches before the application of the steep roofing.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity & Guaranty Company of Baltimore, covering a period of ten (10) years from date of completion.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs in the United States and Canada where its inspection service is available provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval under the following conditions:

- That steep roof area be roofed in conjunction with flat area.
- That the flat roof area shall be covered with a Barrett Specification Type "A" or Type "AA" roof.



METHOD OF STARTING AT EAVES

Barrett



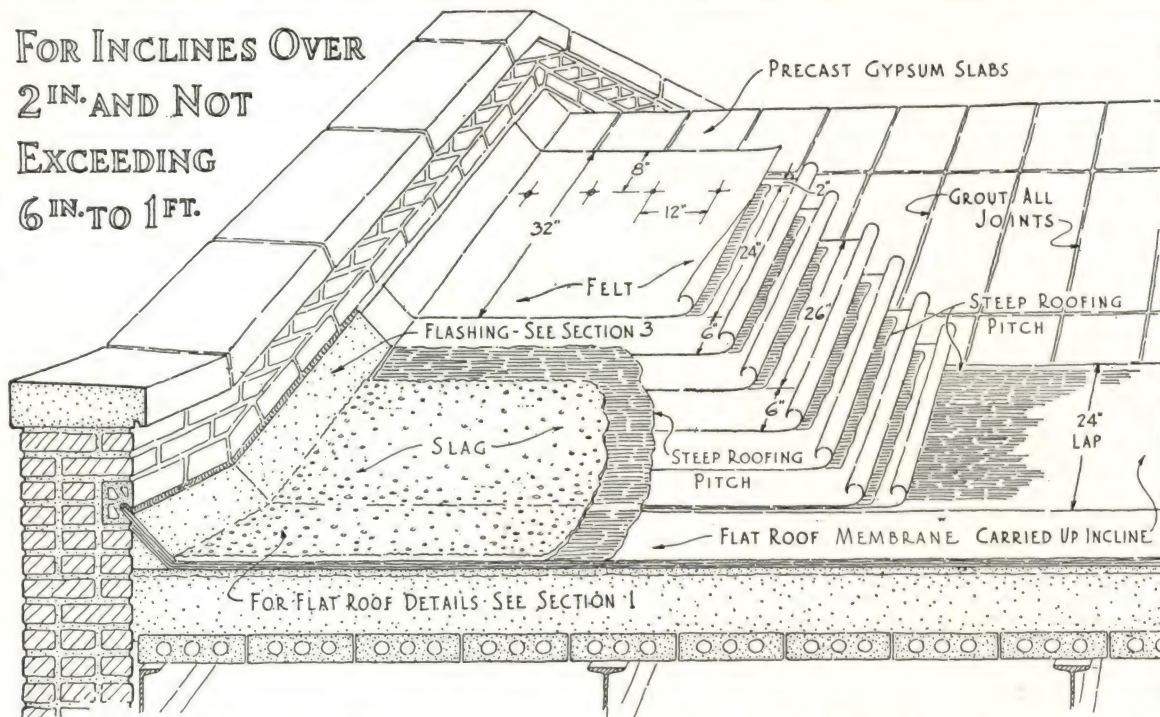
BARRETT SPECIAL STEEP ROOFS

20 YEAR GUARANTY BOND - 5 PLY

FOR USE OVER PRECAST GYPSUM SLABS



FOR INCLINES OVER
2 IN. AND NOT
EXCEEDING
6 IN. TO 1 FT.



SPECIFICATION

All joints between precast gypsum slabs shall be fully grouted. The roof deck shall be smooth, firm, dry and free from loose material.

First—Over the entire surface lay five (5) plies of Barrett Specification Tarred Felt at right angles to the incline of the roof, lapping each sheet twenty-six (26) inches over preceding one. Each sheet shall be nailed with one and one-half inch barbed roofing nails, through flat tin discs, eight (8) inches from the upper edge, nails to be spaced not more than one (1) foot apart.

Second—Mop back on each sheet for a distance of twenty-four (24) inches with Barrett Steep Roofing Pitch. The felt shall follow and shall be firmly embedded into the hot moppings as applied. Care shall be taken that pitch moppings are even with lower edge of each overlying sheet, and that the finished felt surface shall be free of drippage.

Third—Over the entire surface spread with a mop a uniform coating of Barrett Steep Roofing Pitch, into which, while hot, firmly embed not less than two hundred fifty (250) pounds of slag for each one hundred (100) square feet of finished roofing. The slag shall be from one quarter to five eighths inch in size, shall be dry and free from dirt, and shall be embedded into the surface mopping immediately. If roofing is applied during cool weather, or slag is damp, slag shall be heated and dried, so that it is warm when applied to the roof. The slag surfacing shall be continuous, and shall cover and shall be firmly embedded into the surface coating.

General—Felt shall be laid without wrinkles or buckles. Not less than eighty (80) pounds of pitch shall be used for constructing the membrane, and not less than fifty (50) pounds nor more than sixty (60) pounds of Pitch shall be used for embedding the slag in constructing each 100 square feet of completed roof. The Pitch shall not be heated above 400° F. nor shall it be applied to the roof below 350° F.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the inclined surfaces not less than 24 inches before the application of the steep roofing. The roof shall be applied by a Roofing Contractor approved by The Barrett Company. He shall furnish The Barrett Company's Surety Bond Guaranty issued by the United States Fidelity and Guaranty

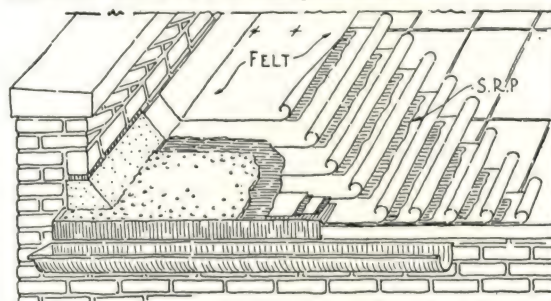
Company of Baltimore, covering a period of 20 years from date of completion in accordance with Note No. 1.

NOTE No. 1—The Barrett Company will issue its Guaranty Bond on jobs in the United States, where its inspection service is available, provided the roof is applied by a Roofing Contractor approved by The Barrett Company in strict accordance with the above specification, and subject to Barrett inspection and approval under the following conditions:

- That the steep roof area shall be roofed in conjunction with the flat roof area.
- That the flat roof area shall be covered with a Barrett Specification type "AA" or type "A" roof.

CONDENSED SPECIFICATION

Roofing—Shall be a Barrett Specification Steep Roof Type "AA", and shall be laid in accordance with the Barrett Specification for use over precast gypsum slabs over steep surfaces, by a Roofing Contractor approved by The Barrett Company. The Roofing Contractor shall furnish The Barrett Company's Surety Bond Guaranty for twenty years from date of completion, in accordance with Note 1 of said specification.



METHOD OF STARTING AT EAVES

Note—This specification also applies over Precast Concrete Slab Roof Decks where provision is made for suitable nailing or where nailing strips are provided in Roof Deck structure. Nailing strips shall be parallel with incline of the roof and spaced not more than three (3) feet apart.

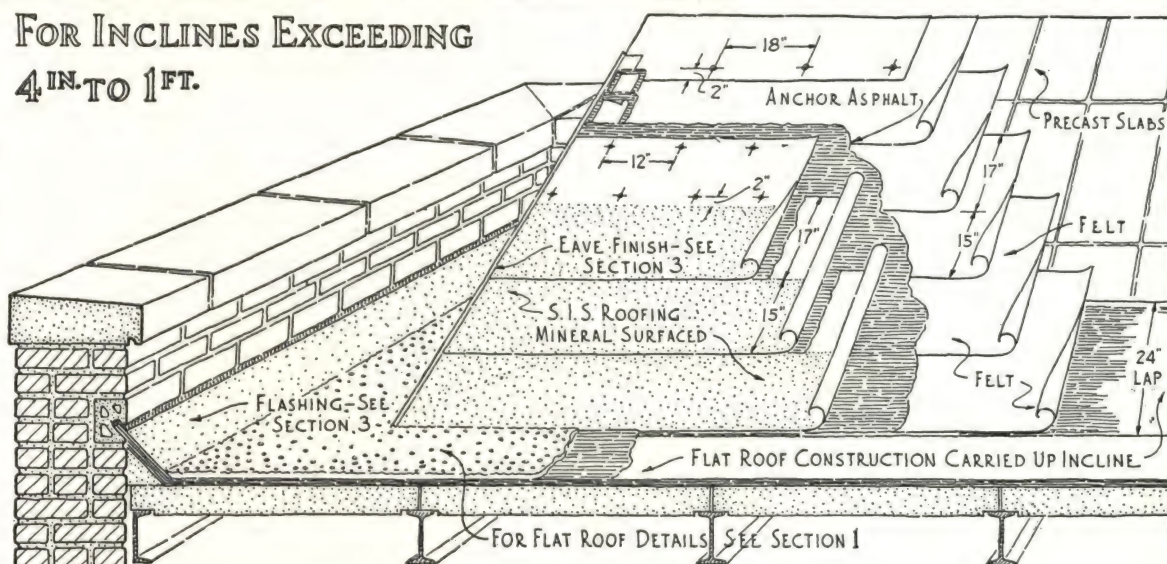
Barrett's

BARRETT SPECIAL STEEP ROOFS

S.I.S. TYPE 10 YEAR GUARANTY BOND

FOR USE OVER PRECAST GYPSUM SLABS

FOR INCLINES EXCEEDING
4 IN. TO 1 FT.



SPECIFICATION

All joints between precast gypsum slabs shall be properly grouted. The roof deck shall be smooth, firm, dry and free from loose material. The gypsum shall permit of nailing or creosoted wooden nailing strips shall be provided. If nailing strips are provided, they shall be parallel with the incline of the roof and spaced not more than three (3) ft. apart.

First—Over the entire surface lay two (2) plies of Barrett Specification Tarred Felt at right angles to the incline of roof, lapping each sheet seventeen (17) inches over preceding one. Each sheet shall be nailed two (2) inches from lower edge with barbed roofing nails, through flat tin disks, spaced not more than eighteen (18) inches.

Second—Over the entire surface spread with a mop a uniform coating of Barrett Anchor Brand Roofing Asphalt, into which, while hot, shall be immediately rolled Barrett S. I. S. Roofing laid at right angles to the incline of the roof, lapping the sheets the full width of the seventeen (17) inch selvage. All sheets of Barrett S. I. S. Roofing shall be securely fastened in place with a double course of one and one-half (1½) inch barbed roofing nails driven through flat tin disks, and placed along the selvage side of the sheet. Nailing courses to be staggered and nails to be spaced not more than twelve (12) inches apart. The lower nailing course shall be held back two (2) inches from the mineral surfacing.

Third—Spread over the entire surface of the seventeen (17) inch selvage a uniform mopping of Barrett Anchor Brand Roofing Asphalt, into which, while hot, shall be immediately rolled the following sheet of Barrett S. I. S. Roofing.

Fourth—All end laps shall be over-lapped at least six (6) inches. The underlying sheet of each end lap shall be nailed with six (6) nails through flat tin disks spaced five (5) inches apart starting one (1) inch from the lower edge of the sheet. The six (6) inch lap shall be coated with Barrett Anchor Brand Roofing Asphalt and the over-lapping sheet thoroughly pressed down.

Fifth—The Barrett S. I. S. Roofing shall be cut in strips not to exceed twenty (20) feet in length and

shall be stacked flat in piles at least twenty-four (24) hours before using.

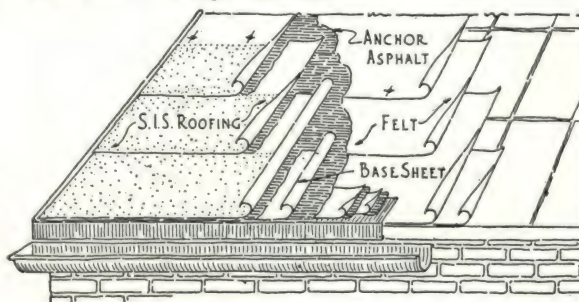
General—The felt and S. I. S. Roofing shall be laid without wrinkles or buckles. Not less than fifty (50) pounds of Barrett Anchor Brand Roofing Asphalt shall be used for constructing each one hundred (100) square feet of completed roof.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the inclined surfaces not less than twenty-four (24) inches before the application of the steep roofing.

The roof shall be applied by a roofing contractor approved by THE BARRETT COMPANY. He shall furnish THE BARRETT COMPANY'S Surety Bond Guaranty issued by the U. S. Fidelity & Guaranty Co. of Baltimore, covering a period of ten (10) years from date of completion.

Note No. 1—THE BARRETT COMPANY will give its Guaranty Bond on jobs in the United States and Canada where its inspection service is available provided the roof is applied by a roofing contractor approved by THE BARRETT COMPANY in strict accordance with the above specification and subject to Barrett inspection and approval under the following conditions:

- That the steep roof area shall be roofed in conjunction with the flat roof area.
- That the flat roof area shall be covered with a Barrett Specification Type "A" or Type "AA" roof.



METHOD OF STARTING AT EAVES

Note—This specification also applies over Precast Concrete Slab Roof Decks where provision is made for suitable nailing or where nailing strips are provided in Roof Deck structure. Nailing strips shall be parallel with incline of the roof and spaced not more than three (3) feet apart.

Barrett



BARRETT SPECIFICATION ROOFS

ROOF CONSTRUCTION DATA



THIS TABLE SHOWS THE RISE OR INCLINE OF ROOFS IN INCHES; DEGREES AND FRACTIONS PER FOOT. IT ALSO INDICATES THE INCREASED AREA PER SQ. FT. OF STEEP ROOFS OVER FLAT ROOFS.

Classification	Incline			Inclined Area Per Sq. Foot Horizontal Area	Percentage Increase In Area Over Flat Roof
	Inch Per Foot Horizontal	Angle With Horizontal	Fractional Factor		
Flat Roofs	1/8	0°-36'		1.000	0.0
	1/4	1°-12'		1.000	0.0
	3/8	1°-47'		1.000	0.0
	1/2	2°-23'	1/48	1.001	0.1
	5/8	2°-59'		1.001	0.1
	3/4	3°-35'	1/32	1.002	0.2
	1	4°-46'	1/24	1.003	0.3
	1 1/8	5°-21'		1.004	0.4
	1 1/4	5°-57'		1.005	0.5
	1 1/2	7°-8'	1/16	1.008	0.8
	1 3/4	8°-18'		1.011	1.1
	2	9°-28'	1/12	1.014	1.4
Steep Roofs	2 1/4	10°-37'		1.017	1.7
	2 1/2	11°-46'		1.021	2.1
	2 3/4	12°-54'		1.026	2.6
	3	14°-2'	1/8	1.031	3.1
	3 1/4	15°-9'		1.036	3.6
	3 1/2	16°-16'		1.042	4.2
	3 3/4	17°-21'		1.048	4.8
	4	18°-26'	1/6	1.054	5.4
	4 1/4	19°-30'		1.061	6.1
	4 1/2	20°-34'		1.068	6.8
	5	22°-37'		1.083	8.3
	6	26°-34'	1/4	1.118	11.8
	7	30°-16'		1.158	15.8
	8	33°-42'	1/3	1.202	20.2
	9	36°-52'		1.250	25.0
	10	39°-48'		1.302	30.2
Extra Steep Roofs	11	42°-31'		1.356	35.6
	12	45°-0'	1/2	1.414	41.4
	14	49°-24'		1.537	53.7
	16	53°-8'		1.667	66.7
	18	56°-19'		1.803	80.3
	20	59°-2'		1.943	94.3
	22	61°-23'		2.088	108.8
	24	63°-26'	1	2.235	123.5

Barrett

SECTION 3

Roof Flashing Specifications and Details

THE prevention of seepage or leaks at masonry walls of the modern building is a serious problem confronting every architect, engineer and builder.

These troubles are frequently traced to faulty flashing construction. Low spots where snow, ice, and rain water concentrate, are usually found along parapet walls, curbs, or other places where flashings are installed. Inadequate or faulty construction at these vital points opens the way to troublesome leaks and costly repairs.

The Barrett system of flashing is considered a component part of the roof construction. The waterproof membrane is definitely tied in with the parapet wall by means of the flashing block. This part of the roof is reinforced, the added protection actually making it the strongest part of the roof. The flashing is flexible, and

permits of movement occasioned by settlement of the deck, or by expansion and contraction in materials.

The Barrett system, used in conjunction with Barrett Specification roofing, definitely eliminates troublesome flashing leaks at parapets, curbs, chimneys, fire-walls, etc. The responsibility for the complete roof, including flashing construction, rests with the Barrett approved roofer. The flashing is installed by the roofing contractor at the same time he applies the roofing, and its performance is fully covered in the guaranty bond.

Good flashings promote the serviceability of good roofs. The Barrett flashing system, developed after years of practical experience, is a worthy companion to Barrett Specification Roofs. Time-tried under every conceivable condition, it is accepted generally as a standard type of construction for both flat and steep built-up roofs.

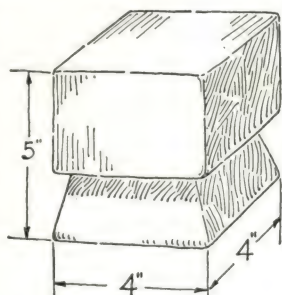


Typical Barrett Flashing Installation—Flashing Block Method

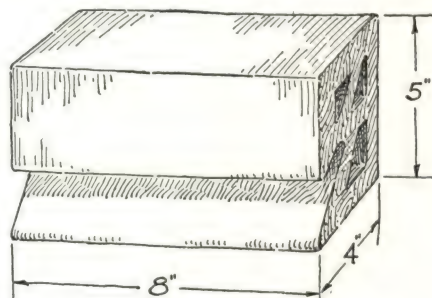


BARRETT ROOF FLASHING SYSTEM

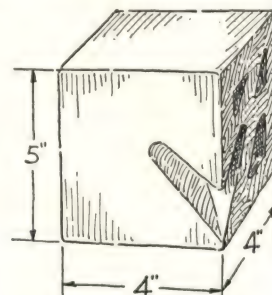
METHOD OF INSTALLING BARRETT FLASHING BLOCK



OUTSIDE CORNER

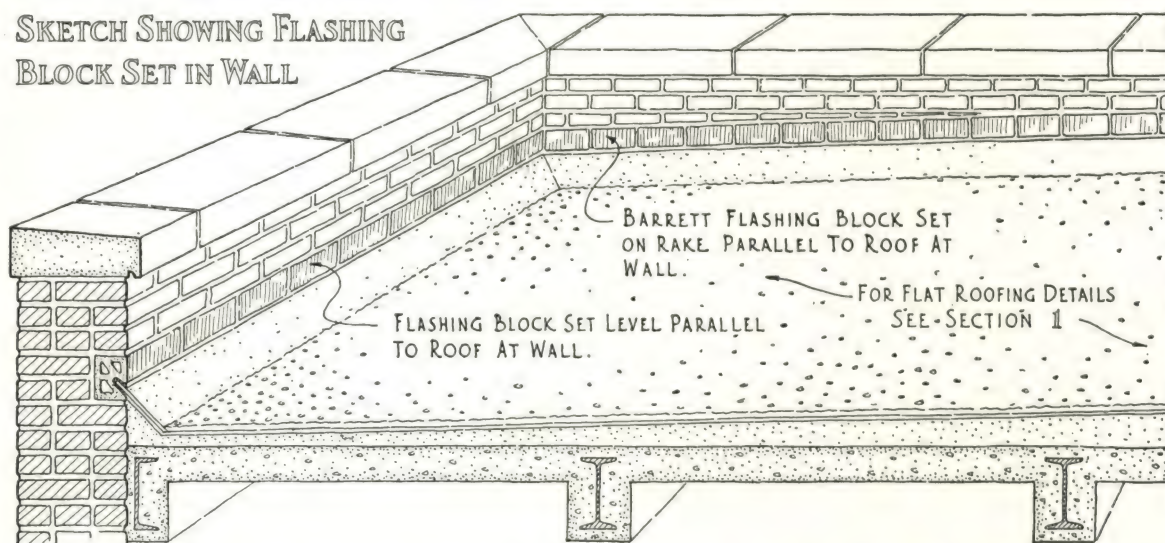


STRAIGHT FLASHING BLOCK



INSIDE CORNER

SKETCH SHOWING FLASHING BLOCK SET IN WALL



FOR MASONRY SPECIFICATION

Barrett Flashing Block shall be built into walls with the base of the block set five (5) inches above and parallel with the finished grade line of the roof at wall.

Blocks shall be laid in true alignment, set in Portland Cement Mortar, and joints shall be properly pointed. All end joints shall be solid mortar joints.

The flashing groove of the blocks shall be thoroughly cleaned of all surplus mortar.

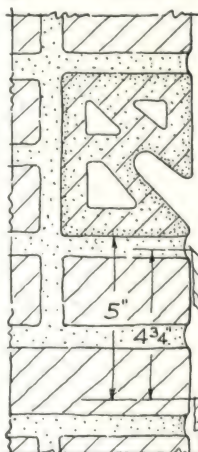
NOTE—Special blocks are manufactured for use at right angle external and internal wall corners.

For Concrete or Gypsum Roof Deck—At angle of roof deck and the walls in which flashing block has been installed, provide a concrete cant that will permit of nailing, the upper edge of which shall terminate one-quarter ($\frac{1}{4}$) inch below the flashing groove. The face of the cant shall have an incline of forty-five (45) degrees the same as the flashing groove in the block. The distance from the innermost end of flashing groove to bottom of cant strip shall not exceed ten (10) inches.

FOR CARPENTRY SPECIFICATION, BOARD ROOF DECK

At angle of roof deck and the walls in which flashing block has been installed, provide a wood cant at least one (1) inch thick, the upper edge of which shall ter-

minate one-quarter ($\frac{1}{4}$) inch below the flashing groove. The face of the cant shall have an incline of forty-five (45) degrees, the same as the flashing groove in the block. The cant shall be securely fastened to the roof deck. The distance from the innermost end of flashing groove to bottom of cant strip shall not exceed ten inches.



BASE OF FLASHING BLOCK SHALL BE SET 5" ABOVE AND PARALLEL WITH FINISHED GRADE LINE OF ROOF AT WALL.

CANT SET AT 45° ANGLE, PARALLEL WITH FLASHING GROOVE.

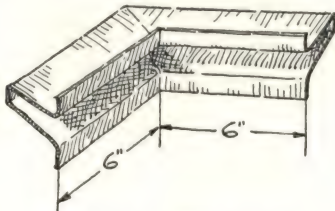
WHERE CONCRETE OR GYPSUM ROOF DECK IS USED CANT SHALL BE CONSTRUCTED OF SIMILAR MATERIALS.

Barrett

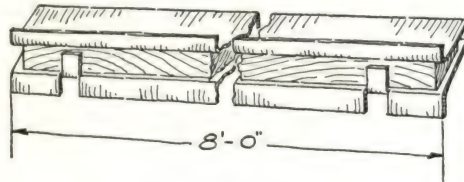


BARRETT ROOF FLASHING SYSTEM

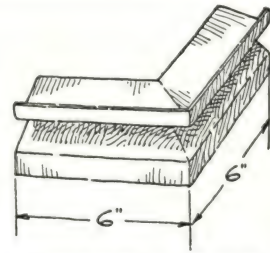
METHOD OF INSTALLING BARRETT FLASHING FORM



INSIDE CORNER

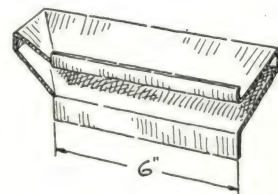
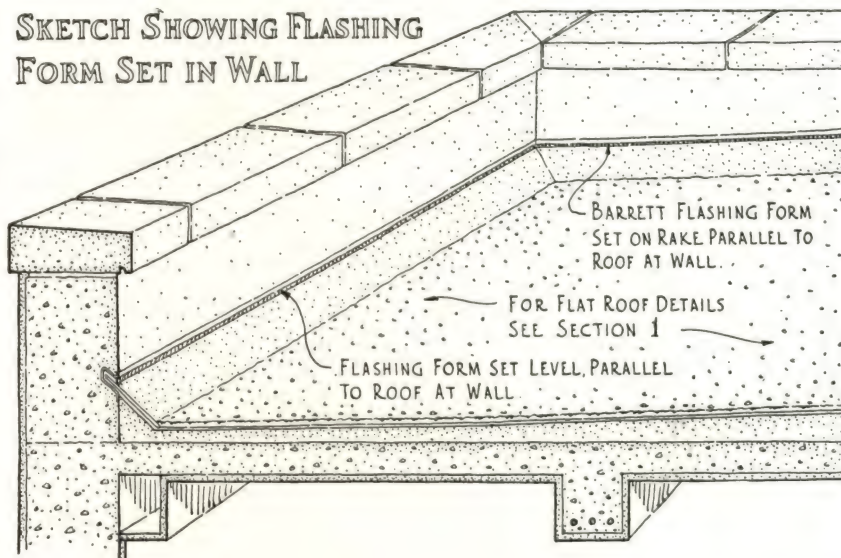


STRAIGHT FLASHING FORM

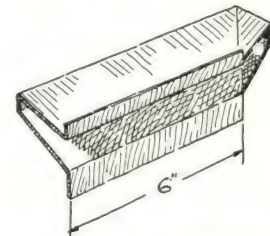


OUTSIDE CORNER

SKETCH SHOWING FLASHING FORM SET IN WALL



INSIDE RETURN LEFT HAND



INSIDE RETURN RIGHT HAND

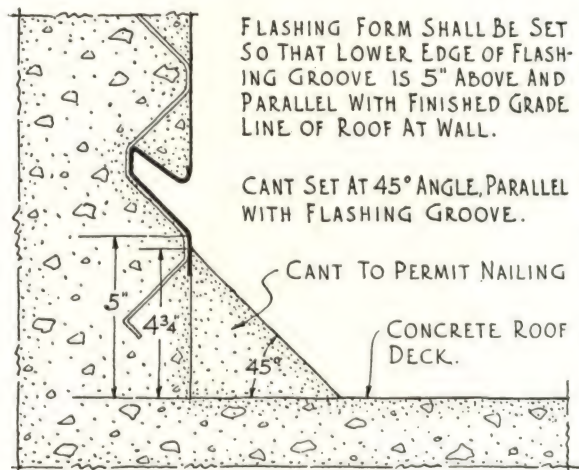
FOR CONCRETE SPECIFICATION

Barrett Flashing Form shall be attached to the inside of the wall form by means of metal strap brackets (so provided) spaced not more than two (2) feet apart and secured by one (1) inch smooth wire nails.

Barrett Flashing Form shall be set so that the lower edge of the flashing groove is five (5) inches above and parallel with the finished grade line of the roof at wall.

Note—Special mitred flashing forms are manufactured for use at right angle external and internal wall corners.

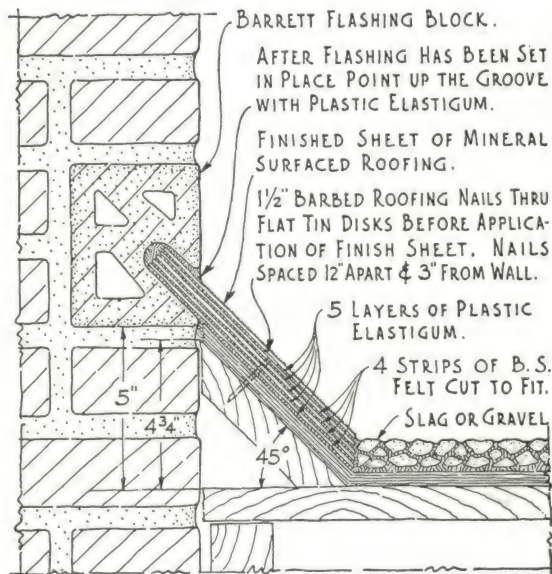
At angle of roof deck and the wall in which flashing form has been installed, provide a concrete cant that will permit of nailing, the upper edge of which shall terminate one-quarter ($\frac{1}{4}$) inch below the flashing groove. The face of the cant shall have an incline of forty-five (45) degrees the same as the flashing groove in the block. The distance from the innermost end of flashing groove to bottom of cant strip shall not exceed ten (10) inches.



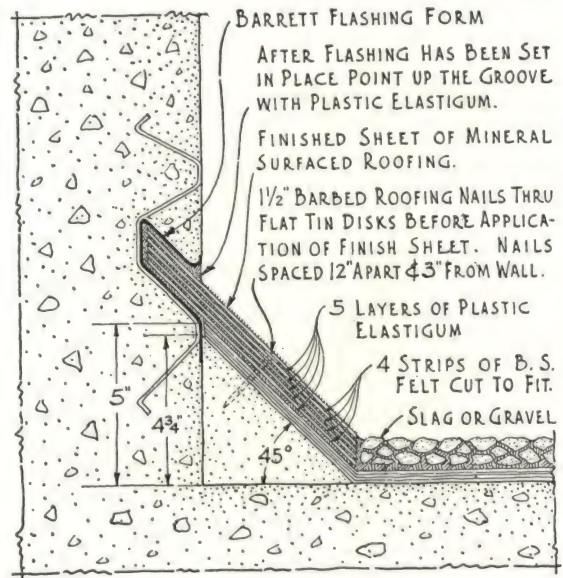
BARRETT ROOF FLASHING SYSTEM

TYPE "A-A"

20 YEAR GUARANTY BOND



BLOCK TYPE
FOR BRICK WALLS



FORM TYPE
FOR CONCRETE WALLS

SPECIFICATION

Note—This flashing shall be installed before gravel, slag, tile or other surfacing material is applied to the roof surface.

First—Before applying flashing material, the flashing groove shall be thoroughly cleaned of mortar or other foreign materials.

Second—The Felt and Pitch roofing shall be extended up the face of the cant to the wall line and cut off evenly at that point. The plies of Felt shall be solidly cemented together with Pitch and be free from wrinkles or buckles.

Third—Over the roofing, covering the cant, and up into the full depth of the flashing groove, apply a heavy uniform layer of Barrett Plastic Elastigum, into which embed one (1) ply of flashing strip cut the proper width from a roll of Barrett Specification Felt. The sheets of the flashing strips shall be lapped one (1) inch and the strips shall extend into the full depth of the flashing groove. This operation shall be repeated until four (4) layers of Plastic Elastigum and four (4) plies of flashing strip have been applied. The fourth flashing strip shall be nailed every twelve (12) inches, three (3) inches from the wall with one and one-half (1 1/2) inch barbed roofing nails through flat tin disks. Each flashing strip shall be set in sep-

arately (not folded) and shall break joints with the underlying ply.

Fourth—Over the entire surface of the flashing strips thus laid, apply a uniform trowelled coating of Plastic Elastigum. Care shall be taken so that a liberal amount of Plastic Elastigum is placed along the opening of the flashing groove. Into the Plastic Elastigum embed immediately a layer of Barrett Everlastic Mineral Surfaced Roofing of the proper width, extending into the full depth of the groove and down to the roofing. The strips of Mineral Surfaced Roofing shall be cut from across the roll so that the end of each strip shall have a two (2) inch selvage. The two (2) inch selvage shall be coated with Plastic Elastigum and shall be over-lapped by the following sheet of Mineral Surfaced Roofing and thoroughly pressed down. The flashing groove shall then be pointed up with Plastic Elastigum.

Note No. 1—IMPORTANT: No projections such as vent pipes, conductor lines or braces shall be constructed through the flashing cant. All such projections shall be placed through roof deck at a point not less than ten (10) inches from the intersection of cant with roof deck.

Note No. 2—THE BARRETT COMPANY will give its Guaranty Bond on jobs in the United States and Canada where its inspection service is available, provided the flashing is installed in strict accordance with the above specification and subject to Barrett inspection and approval under the following condition: That the flashing shall be installed during the application of a Barrett Bonded Roof.

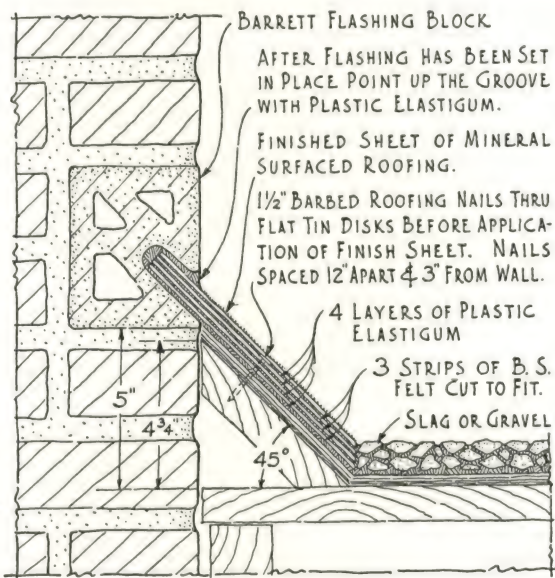
Barrett



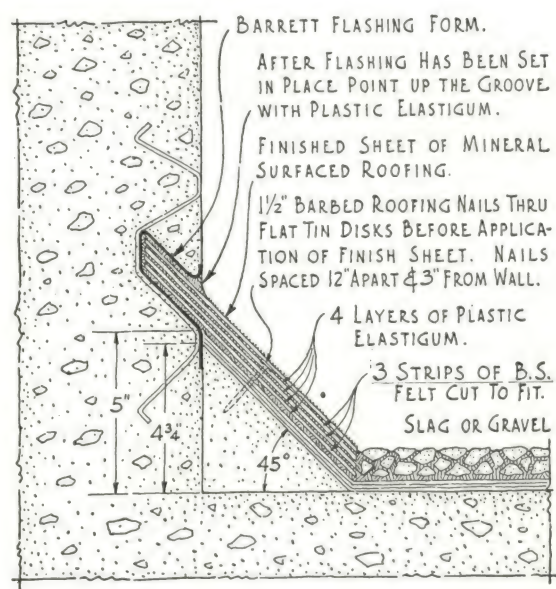
BARRETT ROOF FLASHING SYSTEM

TYPE "A"

15 YEAR GUARANTY BOND



**BLOCK TYPE
FOR BRICK WALLS**



**FORM TYPE
FOR CONCRETE WALLS**

SPECIFICATION

Note—This flashing shall be installed before gravel, slag, tile or other surfacing material is applied to the roof surface.

First—Before applying flashing material, the flashing groove shall be thoroughly cleaned of mortar or other foreign materials.

Second—The Felt and Pitch roofing shall be extended up the face of the cant to the wall line and cut off evenly at that point. The plies of Felt shall be solidly cemented together with Pitch and be free from wrinkles or buckles.

Third—Over the roofing, covering the cant, and up into the full depth of the flashing groove, apply a heavy uniform layer of Barrett Plastic Elastigum, into which embed one (1) ply of flashing strip cut the proper width from a roll of Barrett Specification Felt. The sheets of the flashing strips shall be lapped one (1) inch and the strips shall extend into the full depth of the flashing groove. This operation shall be repeated until three (3) layers of Plastic Elastigum and three (3) plies of flashing strip have been applied. The third flashing strip shall be nailed every twelve (12) inches, three (3) inches from the wall with one and one-half (1½) inch barbed roofing nails through flat tin disks. Each flashing strip shall be set in

separately (not folded) and shall break joints with the underlying ply.

Fourth—Over the entire surface of the flashing strips thus laid, apply a uniform trowelled coating of Plastic Elastigum. Care shall be taken so that a liberal amount of Plastic Elastigum is placed along the opening of the flashing groove. Into the Plastic Elastigum embed immediately a layer of Barrett Everlastic Mineral Surfaced Roofing of the proper width, extending into the full depth of the groove and down to the roofing. The strips of Mineral Surfaced Roofing shall be cut from across the roll so that the end of each strip shall have a two (2) inch selvage. The two (2) inch selvage shall be coated with Plastic Elastigum and shall be over-lapped by the following sheet of Mineral Surfaced Roofing and thoroughly pressed down. The flashing groove shall then be pointed up with Plastic Elastigum.

Note No. 1—IMPORTANT: No projections such as vent pipes, conductor lines or braces shall be constructed through the flashing cant. All such projections shall be placed through roof deck at a point not less than ten (10) inches from the intersection of cant with roof deck.

Note No. 2—THE BARRETT COMPANY will give its Guaranty Bond on jobs in the United States and Canada where its inspection service is available, provided the flashing is installed in strict accordance with the above specification and subject to Barrett inspection and approval under the following condition: That the flashing shall be installed during the application of a Barrett Bonded Roof.

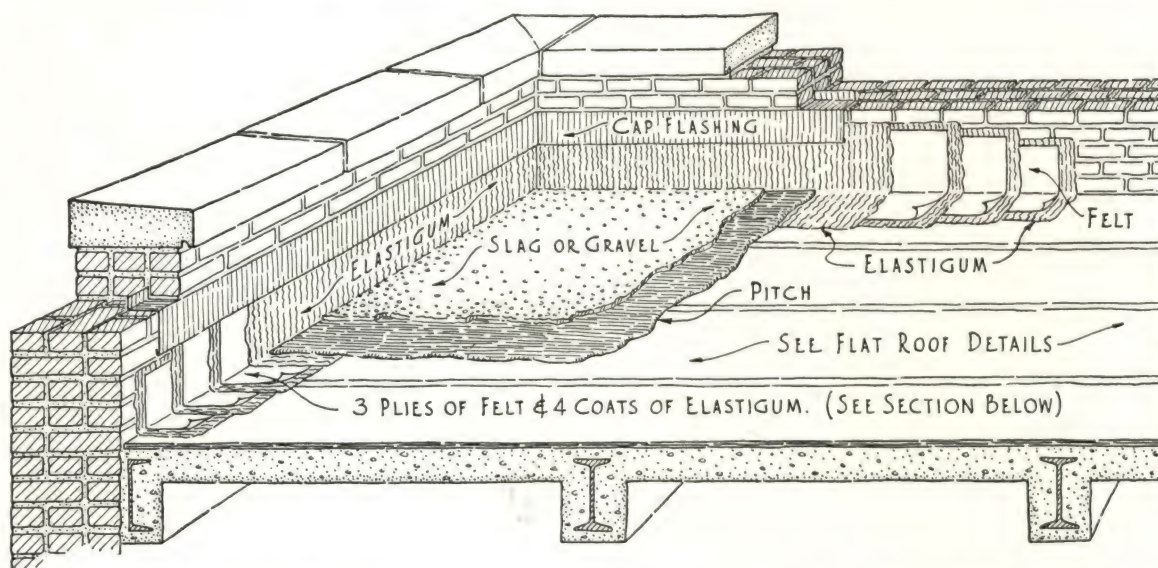




BARRETT ROOF FLASHING SYSTEM

PLASTIC ELASTIGUM TYPE 10 YEAR GUARANTY

FOR BRICK OR CONCRETE WALLS



SPECIFICATION

Note—If the roofing is laid over a board deck, the first two (2) plies of Felt shall be turned up against perpendicular surfaces at least four (4) inches. If the roofing is laid over a concrete deck, all plies shall be cut off evenly at the angle of the roof deck and parapet walls.

First—After all plies of roofing have been laid and preceding the application of the slag or gravel surface, apply a uniform trowelled coating of Barrett Plastic Elastigum for a distance of ten (10) inches up the parapet wall and six (6) inches out on the roofing into which shall be immediately embedded a ten (10) inch strip of Barrett No. 15 Asphalt Felt extending up the wall six (6) inches and out on the roofing four (4) inches.

Second—This strip shall be coated with Barrett Plastic Elastigum. Then follow with a second strip of Barrett No. 15 Asphalt Felt thirteen (13) inches wide extending eight (8) inches up the wall and five (5) inches out on the roof.

Third—This strip shall be coated with Barrett Plastic Elastigum into which embed a third strip of Barrett No. 15 Asphalt Felt sixteen (16) inches wide, extending ten (10) inches up the wall and six (6) inches out on the roof.

Fourth—This strip shall be coated uniformly with Barrett Plastic Elastigum. Care shall be taken so that the top edge of the felt strips shall be pressed firmly against the masonry wall and the Plastic Elastigum feathered against it.

Felt strips shall not exceed ten (10) feet in length and shall be lapped at least one (1) inch and all joints broken so that each is covered by at least two (2) thicknesses of felt.

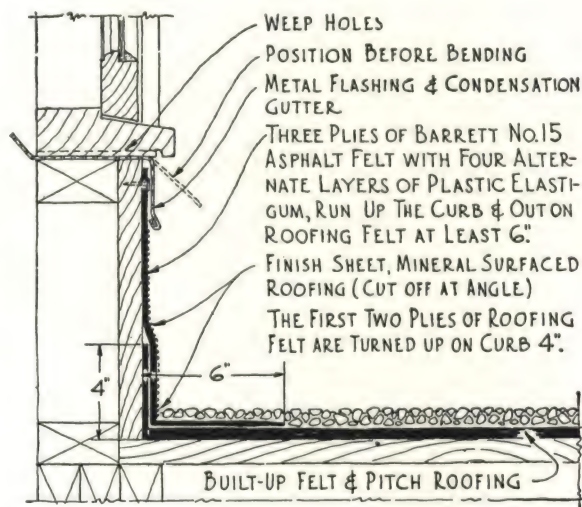
Where a cant is used, the width of the first sheet of felt installed shall be such that at least four (4) inches shall extend above top of the cant and four (4) inches

out on the roof. Each succeeding strip shall follow the proportions, as specified above.

Note No. 1—THE BARRETT COMPANY will give its ten-year guaranty on jobs in the United States and Canada where its inspection service is available, provided the flashing is installed in strict accordance with the above specification and subject to Barrett inspection and approval under the following condition: That the flashing shall be installed during the application of a Barrett Bonded Roof.

Architect's Note—The use of a metal counter flashing with this type of installation is optional with Architect, and if desired should be covered in specifications.

Where metal counter flashing is provided with this type of installation, and where specified, cap sheet of Barrett Everlastic mineral surfaced roofing may be applied after plastic elastigum flashing has been installed in place. Cap sheet shall be cut off at roof line. End laps shall be at least two (2) inches, with under lap well fastened and coated with plastic elastigum.

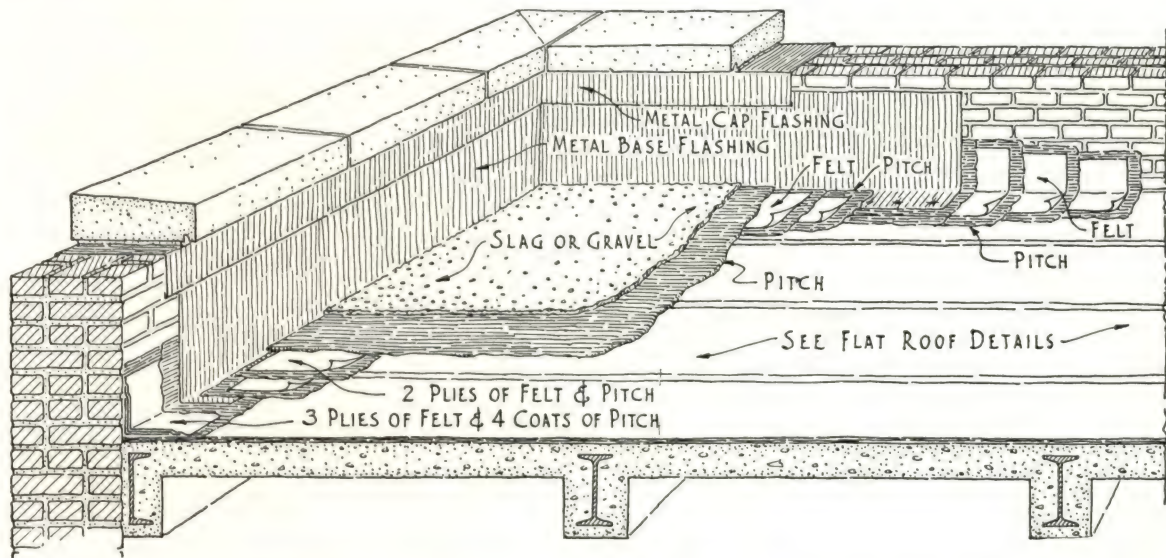


DETAIL FOR CURB FLASHING

Barrett

BARRETT ROOF FLASHING SYSTEM

METHOD OF INSTALLING METAL CAP & BASE FLASHING



SPECIFICATION

Note—Architect or engineer shall specify and describe kind of metal to be used for flashing.

Metal flashings shall be installed at all parapet walls, curbs, pent houses and other vertical surfaces as shown on plans.

Cap Flashings—(1) All cap flashings shall be set into brick walls for a distance of four (4) inches and turned up one (1) inch behind the first course of brick and down the face of the wall overlapping the base flashing at least two (2) inches. End laps shall be at least two (2) inches and soldered.

Architect's Note—Alternate Specification:

(2) All cap flashings shall be set into brick walls and shall extend from inside face of wall to within one (1) inch of outside face, and down inside face of wall overlapping the base flashing at least two (2) inches. End laps shall be at least two (2) inches and soldered.

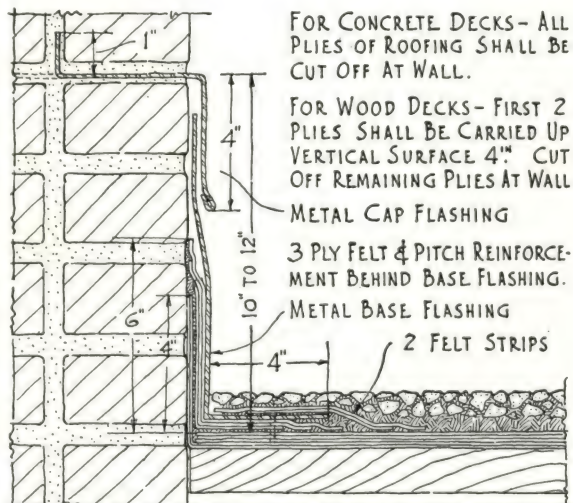
Felt and Pitch Reinforcement—After all plies of roofing have been laid, the roofing contractor shall set in separately, at the angle of the roof deck and vertical surface, three (3) plies of tarred felt cemented together with coal tar pitch. These plies shall extend out on the roofing at least four (4) inches and up the vertical surface six (6) inches. The last ply shall be coated with coal tar pitch. For roofing guaranteed for fifteen (15) years or less, a felt and pitch reinforcement of two (2) plies is sufficient.

Base Flashings—Over the felt and pitch reinforcement thus applied, the metal base flashing shall be set, extending out on the roof four (4) inches and up the vertical surface, not less than ten (10) inches, nor more than twelve (12) inches. The base flashing shall be nailed to the roof deck with barbed roofing nails spaced, not more than three (3) inches on centers on a line not exceeding three-quarters ($\frac{3}{4}$) of an inch from the outer edge of the metal. If concrete roof deck does not per-

mit of nailing, a creosoted wood nailing strip at least one (1) inch thick, with two (2) inch face and three (3) inch base, shall be installed, centered on a line three (3) inches from the vertical surface.

End laps shall be locked and soldered unless otherwise specified.

The four (4) inches of metal on the roof shall be given a priming coat of Barrett Everjet paint. It shall then be coated with Coal Tar Pitch into which shall be immediately embedded a strip of tarred felt four (4) inches wide centered over the nailing course. The first strip shall be coated with Coal Tar Pitch into which shall be immediately embedded a second strip of tarred felt six (6) inches wide completely covering the first.

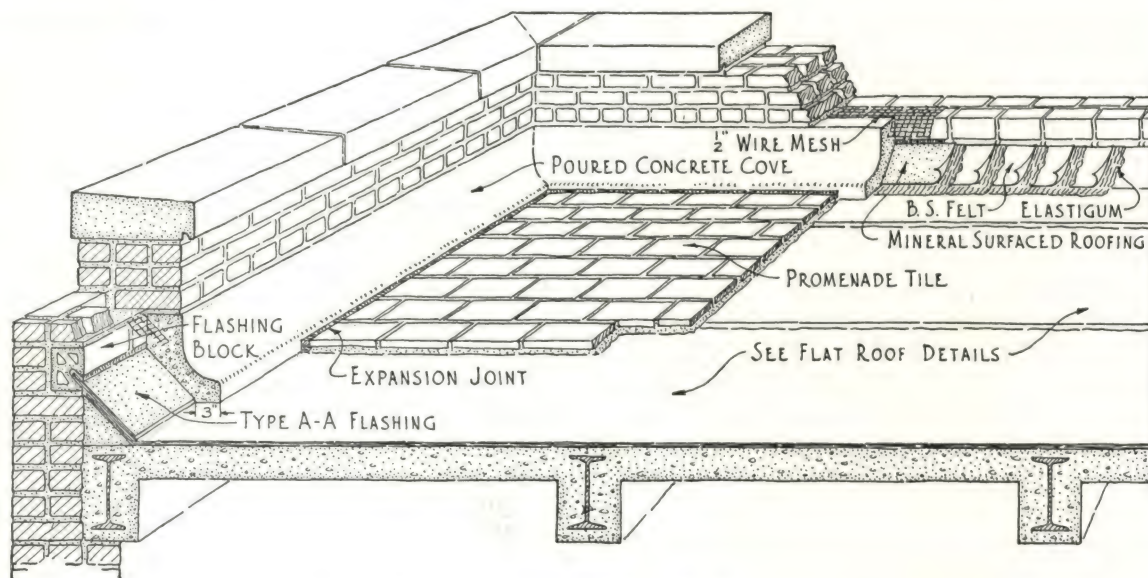


Barrett

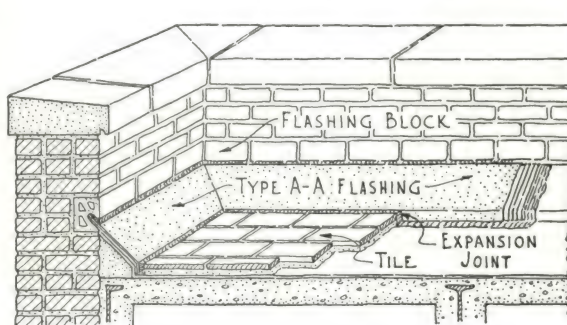


BARRETT ROOF FLASHING SYSTEM

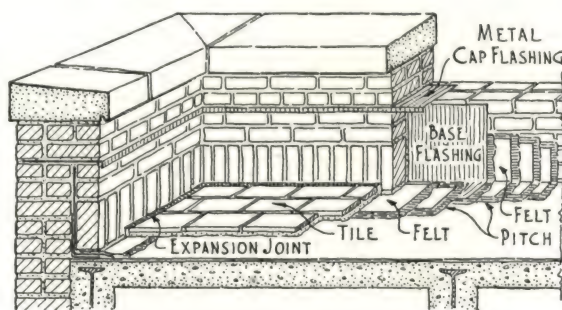
METHOD OF INSTALLING FLASHING FOR PROMENADE TILE ROOFS



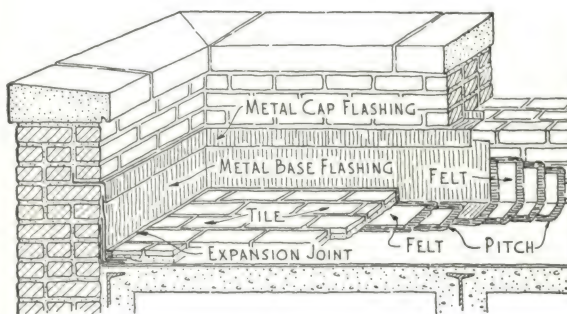
CONCEALED TYPE "A-A" FLASHING



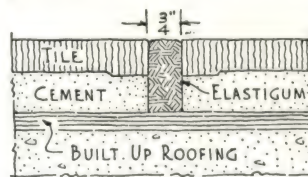
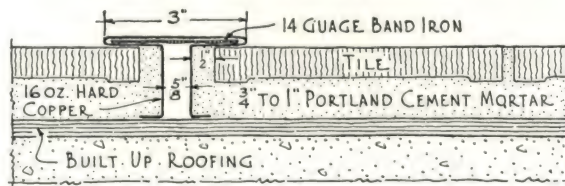
TYPE "A-A" FLASHING



CONCEALED METAL FLASHING



METAL FLASHING



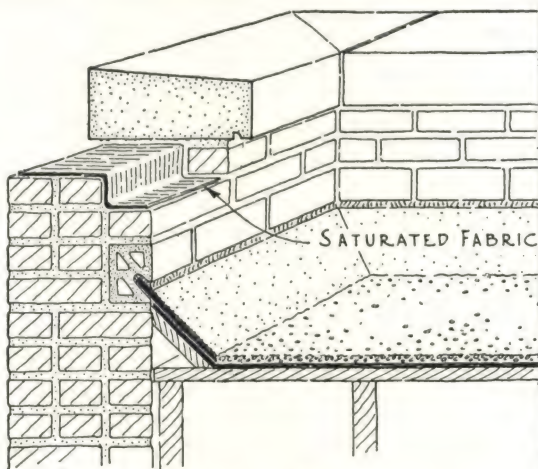
NOTE —
EXPANSION JOINTS SPACED
25'-0" IN EACH DIRECTION
EXTENDING FROM TOP OF
TILE TO THE FELT & PITCH
WATERPROOFING.

TYPES OF EXPANSION JOINTS

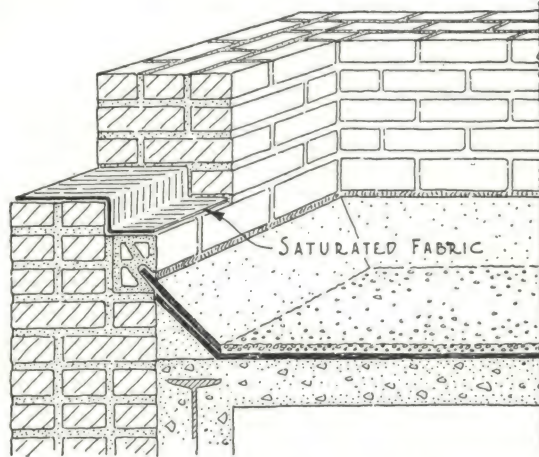
Barrett



BARRETT FLASHING SYSTEM FOR PARAPET WALLS, SPANDREL BEAMS, ETC.



THRU WALL FLASHING
LOW PARAPET



THRU WALL FLASHING
HIGH PARAPET

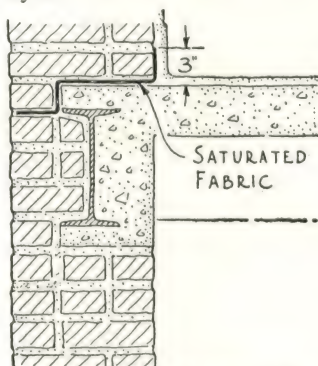
SPECIFICATION

On all parapet walls, as detailed, provide and install waterproofing course consisting of two (2) plies of Barrett Waterproofing Fabric and three (3) full trowel coatings of Barrett Plastic P B Cement, applied alternately. Waterproofing course shall be continuous and shall extend to within one-half ($\frac{1}{2}$) inch of outside edges of walls. All end laps shall be not less than three (3) inches, and each succeeding layer shall break joints with underlying layer.

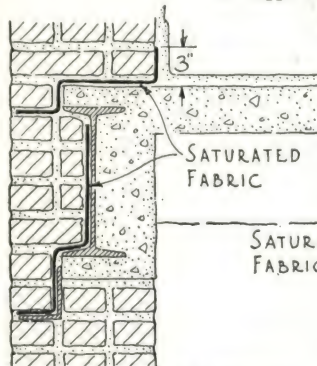
The fabric shall be applied without wrinkles or buckles and all trowel coatings shall be smooth and full. Care shall be taken not to injure the waterproofing course either during application or after completion.

Notes: 1. All surfaces on which the waterproofing course is to be installed shall be smooth, dry and free from loose materials.

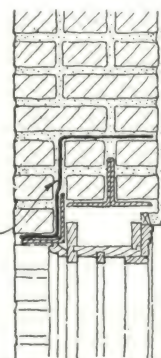
2. On low parapets waterproofing course may be installed under copings. On high parapets or party walls waterproofing course shall be installed flush with top of counter flashing or raggle block.



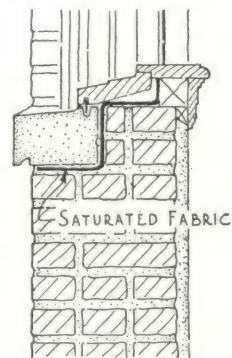
SPANDREL FLASHING
COUNTER TYPE



SPANDREL FLASHING
BASE & COUNTER TYPE



WINDOW HEAD
FLASHING



WINDOW SILL
FLASHING

SPECIFICATION

At all spandrels, as detailed, provide and install waterproofing course consisting of two (2) plies of Barrett Waterproofing Fabric, and three (3) full trowel coatings of Barrett Plastic P B Cement, applied alternately. Waterproofing course shall be continuous, shall extend to within one-half ($\frac{1}{2}$) inch of outside edge of wall, and shall be turned up and cemented to inside walls to a height of at least three (3) inches. All end laps shall be not less than three (3) inches, and each succeeding layer shall break joints with underlying layer.

The fabric shall be applied without wrinkles or buckles and all trowel coatings shall be smooth and full. Care shall be taken not to injure the waterproofing course either during application or after completion.

Notes: 1. All surfaces on which the waterproofing course is to be installed shall be smooth, dry and free from loose materials.

2. Method to be followed (whether counter or base and counter) shall be clearly indicated on plans and in specifications prepared by architect.

Barrett



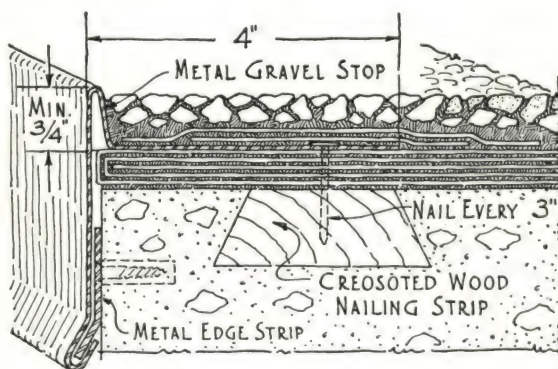
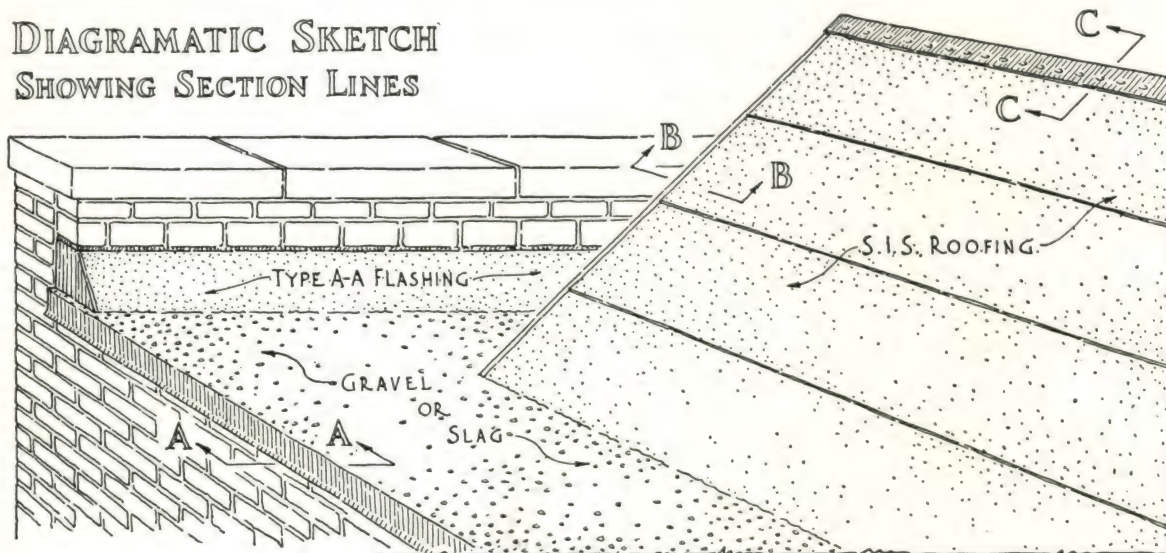
BARRETT ROOF FLASHING SYSTEM

FLAT & STEEP ROOF CONSTRUCTION

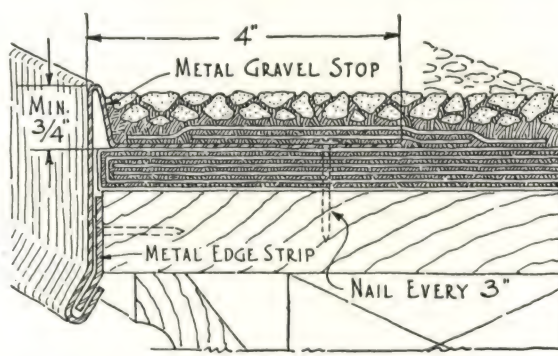
METHOD OF FINISHING EAVES & EDGES



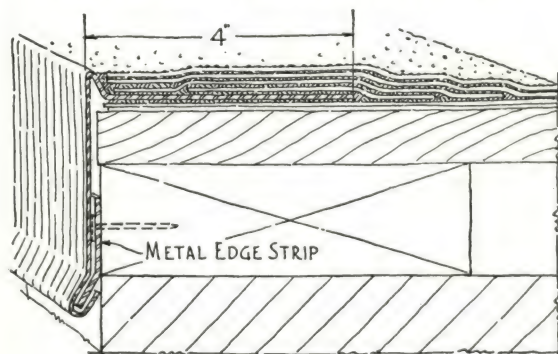
DIAGRAMATIC SKETCH SHOWING SECTION LINES



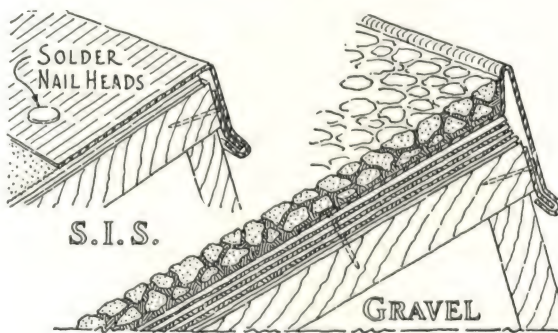
SECTION A-A
METAL EAVE FOR CONCRETE DECK



SECTION A-A
METAL EAVE FOR WOOD DECK



SECTION B-B
GABLE EDGE FOR STEEP ROOFS



SECTION C-C
METAL RIDGE FOR SAWTOOTH SKYLIGHT

Barrett

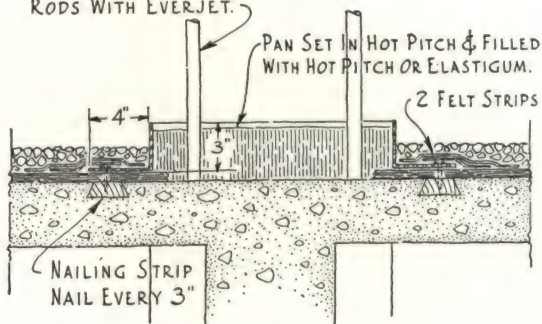


BARRETT ROOF FLASHING SYSTEM

DETAILS FOR SIGN SUPPORTS, STACKS, STUB COLUMNS, ETC.

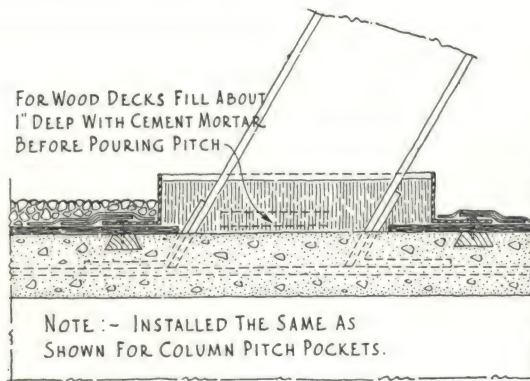


PAINT EXPOSED PORTION OF
RODS WITH EVERJET.

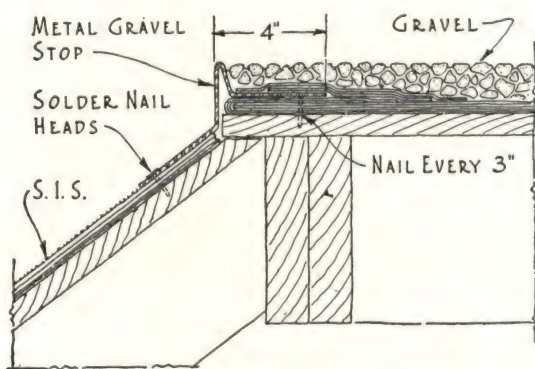


PITCH POCKETS
FOR COLUMNS

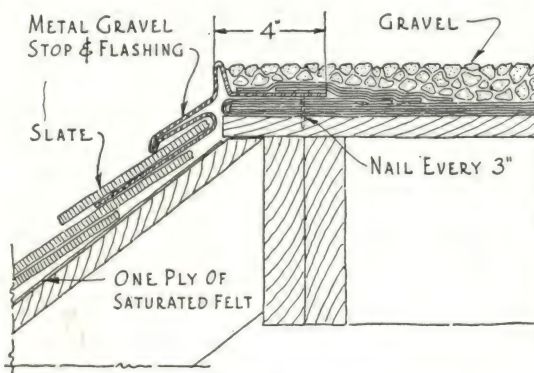
FOR WOOD DECKS FILL ABOUT
1" DEEP WITH CEMENT MORTAR
BEFORE POURING PITCH.



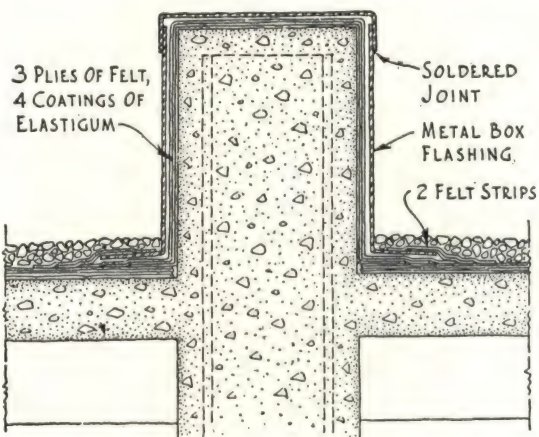
PITCH POCKETS
FOR SIGN SUPPORTS



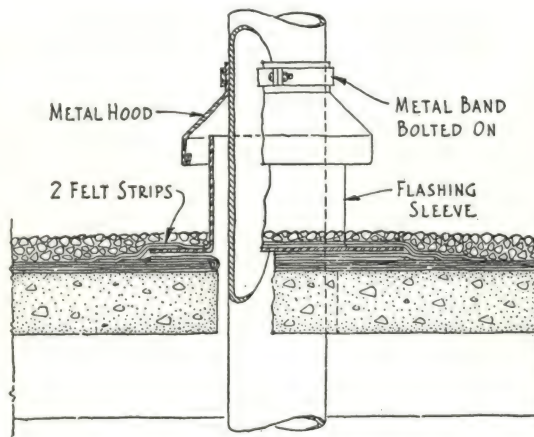
DETAIL FOR FLAT & STEEP ROOF
CONNECTION



DETAIL FOR FLAT & STEEP
SHINGLE TYPE ROOF CONNECTION



METAL CASING FOR STUB COLUMNS



FLASHING FOR STACKS

Barrett



BARRETT ROOF DRAINAGE SYSTEM

TABLE FOR DETERMINATION OF ROOF LEADERS



THE determination of leader sizes required to drain roof areas effectively depends largely on local conditions, and can be accurately calculated only when the rainfall intensity is definitely known. It is estimated that the maximum rate in the United States and Canada varies from 4.5 to 8.7 inches per hour. It is reasonable, therefore, to base computations on an intensity of 8 inches per hour.

In designing drainage systems, the location of leader lines and openings should first be determined. It is recommended that leader openings be spaced not more than 75 ft. apart.

Drainage of 150 sq. ft. of roof area per square inch of leader pipe opening is an average value for the United States and Canada. This table, therefore, is based on 150 sq. ft. of roof area, drained per square inch of leader pipe area, and on a maximum rainfall intensity of 8 inches per hour. Modifications in last column of table should be made to suit higher or lower rainfall intensities.

Leader Pipe Size (Diameter Inches)	Leader Pipe Area (In Square Inches)	Roof Area Drained (In Square Feet)
3	7.07	1060
4	12.57	1885
5	19.63	2945
6	28.27	4240
8	50.26	7540

NOTES:—All outlets should be provided with strainers and roof flashing flanges.

Leader pipes should not be less than three inches in diameter.

Barrett

SECTION 4

Roof Drainage System Specifications and Details

IN ALL types of roof construction, it is consistent that roof drains be at least as permanent as the roof coverings they serve. They should be easy to install, should effectively function under all prevailing conditions, and should provide against clogging of drainage outlets by leaves or debris deposited on the roof proper.

The Barrett Holt Roof Connection* meets the demand for a completely assembled, long-lived and dependable roof drain fixture. The connection is made up in a variety of types to meet the particular conditions involved. It consists of a roof fitting with roof locking attachment; a component flashing flange; and an expansion joint. The types furnished for use in connection with inside leader lines are equipped with a cast metal tile or gravel stop; a strainer plate; and serviceable cast metal strainer.

The flashing flange furnished as a component part of the Barrett Holt Roof Connection assures a dependable connection between the leader head unit and the roof covering. The expansion joint makes possible a flexible, yet water and gas-tight joint between the connection and

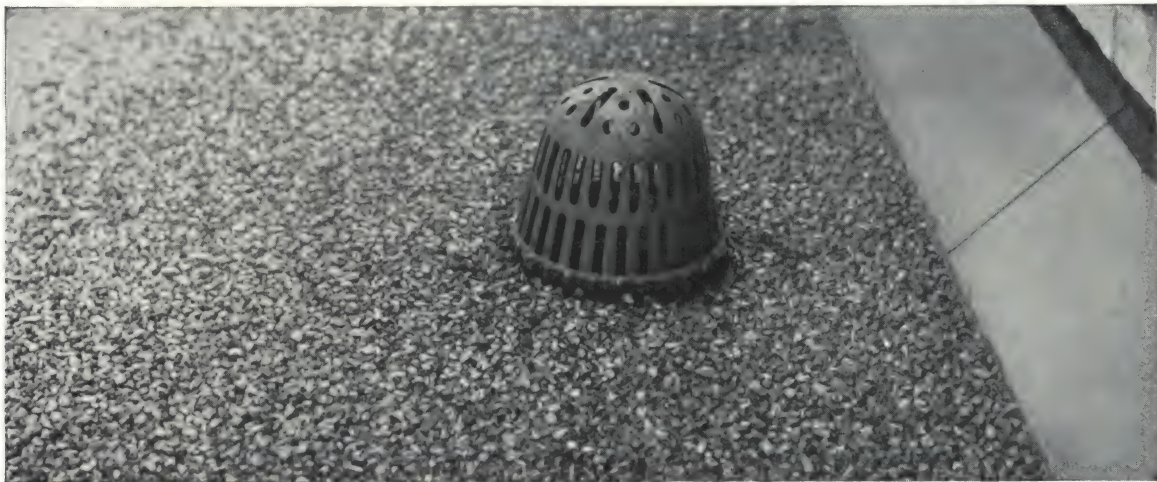
the pipe or fixture joined to it. The changes resulting from shrinkage, settlement, and expansion or contraction are thereby properly provided for without danger of broken joints or troublesome leaks.

They are used: (1) As a roof leader connection where inside leader or conductor pipe is installed; (2) As a roof vent connection where soil or waste vent pipe is installed; (3) As a connection where any pipe, flag-pole, tank support or similar fixture is carried through the roof deck of a building.

More than twenty years of use under exacting conditions have proved the Barrett Holt Roof Connection to be the most dependable device of its kind on the market. It simplifies specification procedure—a type to meet each need can be specified in a few words. It is easy to install, and allowances covering extra parts or assembly costs are not necessary.

The Barrett Holt Roof Connections described are standard, and are recommended for use on all types of flat and steep roof construction, in accordance with the specifications outlined.

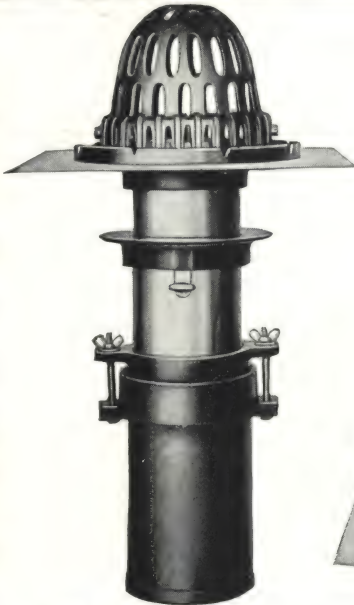
* Patented



Typical Barrett Holt Roof Leader Installation



BARRETT ROOF DRAINAGE SYSTEM HOLT ROOF LEADER & VENT CONNECTIONS



Type 1 Leader Connection
for Slag or Smooth Surfaced Roofs



Type 1 Leader Connection
for Tile Surfaced Roofs



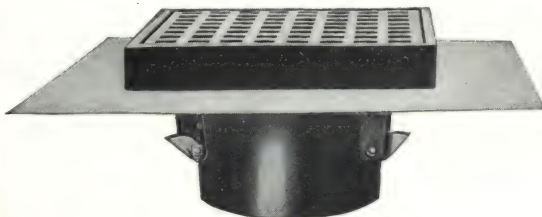
Type 2 Leader Connection
for Inclined Roofs



Type 5 Leader Connection
for Slag or Smooth Surfaced Roofs



Type 6 Leader Connection
for Slag or Smooth Surfaced Roofs



Type 6 Leader Connection
for Tile Surfaced Roofs

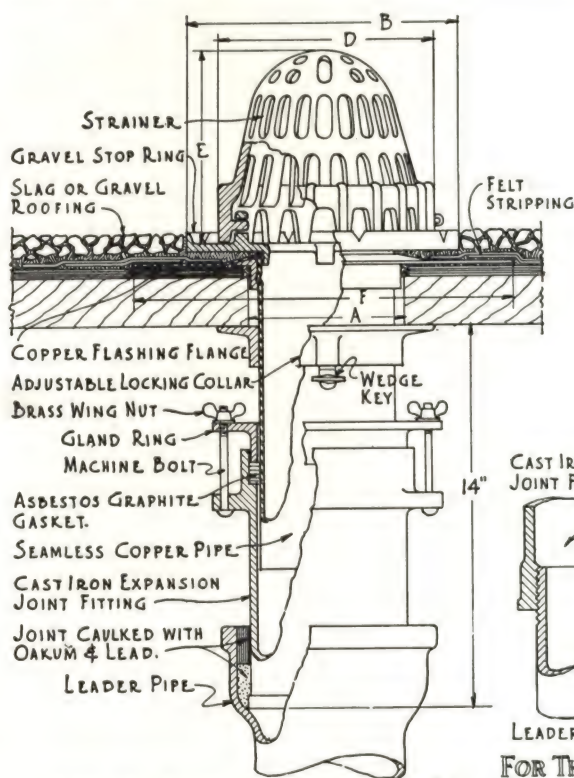


Type 6 Vent Connection
for Slag or Smooth Surfaced Roofs

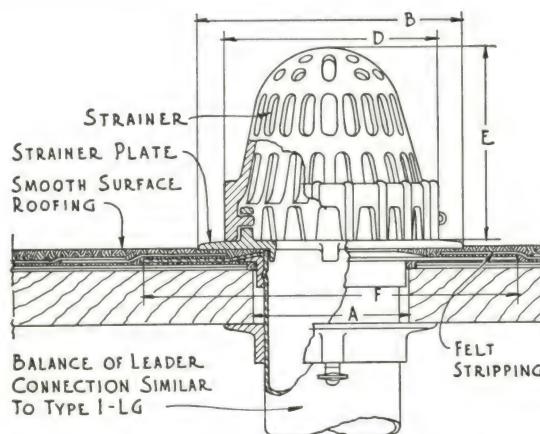
Barrett

BARRETT ROOF DRAINAGE SYSTEM

METHOD OF INSTALLING HOLT LEADER CONNECTIONS FOR TYPES 1-LG, 1-LS & 1-LM

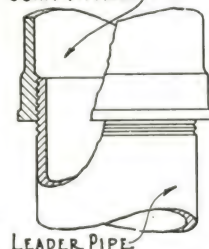


SLAG OR GRAVEL SURFACE-TYPE 1-LG



SMOOTH SURFACE-TYPE 1-LS

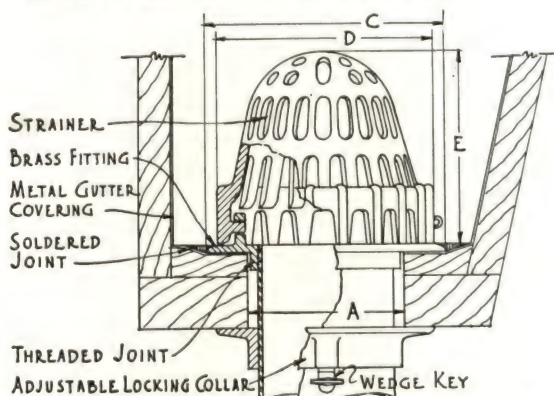
CAST IRON EXPANSION JOINT FITTING



LEADER PIPE FOR THREADED PIPE

SIZE OF PIPE	A	B	C	D	E	F
3"	4"	8"	7"	6 3/4"	6 1/8"	12"x12"
4"	5"	8"	7"	6 3/4"	6 1/8"	12"x12"
5"	6"	10 3/4"	9 3/4"	9 1/2"	8 1/2"	14"x14"
6"	7"	10 3/4"	9 3/4"	9 1/2"	8 1/2"	16"x16"
8"	9"	11 3/4"	11"	10 1/2"	9 1/2"	18"x18"
10"	11"	14 1/4"	13 1/2"	13"	11"	20"x20"

DIMENSION TABLE



METAL COVERED GUTTERS-TYPE 1-LM

TABLE SHOWING LENGTH OF CONNECTION REQUIRED FOR GIVEN THICKNESS OF ROOF DECK

THICKNESS OF ROOF DECK	LENGTH OF CONNECTION
1" MAX.	10"
3" "	12"
5" "	14"
7" "	16"
9" "	18"

NOTE.—WHEN SCREW THREAD PIPE IS TO BE USED IN BUILDINGS CONSTRUCTED OF STEEL, CONCRETE, BRICK, STONE OR SIMILAR NON-SHRINKABLE MATERIAL, AND THE EXPANSION AND CONTRACTION OF THE LEADER PIPE WILL NOT EXCEED 1", A CONNECTION 2" SHORTER MAY BE USED. THE MINIMUM LENGTH OF THE CONNECTION IS 10".

These types are used as leader connections on flat roofs having interior drainage, except roofs covered with tile or a similar material, and where ample working space is provided below the roof deck.

SPECIFICATION

The opening through the roof deck shall be of proper size to receive the Roof Leader Connection and shall be concentric with leader pipe.

Barrett Holt Roof Leader Connection, Type shall be installed at all drainage outlets and shall be of proper size and length to connect to inch leader pipe as shown on Drawing No.

Holt Roof Leader Connections shall be installed and connected complete in strict accordance with directions of the manufacturer.

Note—Where built-up roofing is used as a roof covering, two plies of felt thoroughly embedded in hot bitumen shall be applied over the entire copper flashing flange, the outer edge of the first ply to extend beyond the flange not less than three (3) inches and of the second ply not less than six (6) inches before application of finished roof surfacing.

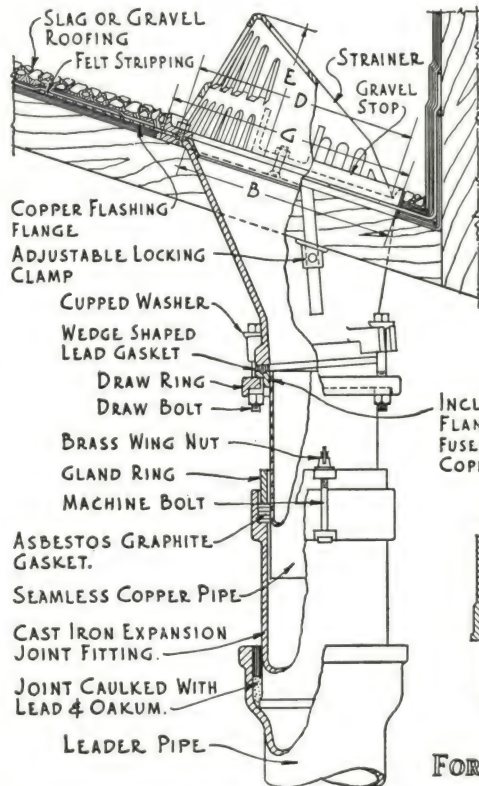
Important—The copper flashing flange being an integral part of the Type 1-LG, 1-LS and 1-LM Connections, shall in no case be removed. If the flange is bent, it shall be straightened and made smooth before it is set in place. The flashing flange shall be secured to the roof deck with nails wherever possible.

Barrett

BARRETT ROOF DRAINAGE SYSTEM

METHOD OF INSTALLING HOLT LEADER CONNECTIONS

FOR TYPES 2-LG & 2-LS



SIDE VIEW

SLAG OR GRAVEL SURFACE TYPE 2-LG

This type is used as a leader connection on inclined roofs ranging from 12 to 42 degrees and having interior drainage. The range of variation of the standard connection is from 18° to 28°. For lesser inclines ranging from 12° to 18° or greater inclines ranging from 28° to 42°, special fittings are furnished.

SPECIFICATION

The opening through the roof deck shall be of proper size to receive the Roof Leader Connection, and shall be concentric with leader pipe.

First—Barrett Holt Roof Leader Connection, Type shall be installed at all drainage outlets and shall be of proper size and length to connect to inch leader pipe as shown on Drawing No.

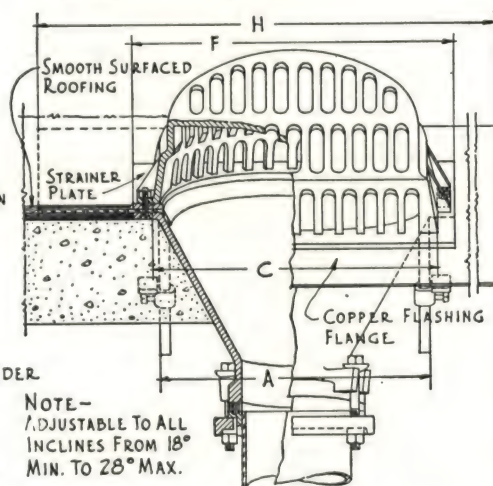
Second—Holt Roof Leader Connection shall be adjusted to fit the roof incline and draw-bolts tightened to obtain a water-tight joint. The Connection shall be set in place so that the lower surface of the iron flange shall be flush with the finished surface of the roof deck. The adjustable locking clamps shall be brought up tightly against the under-side of the roof deck and firmly fastened with the set screws so that the Connection is made integral with the roof deck.

Third—At each drainage point a section of the valley roofing not less than three (3) feet wide shall be carried up the inclined surface of the roof deck not less than two (2) feet. Roofing shall terminate at the outer edge of the iron flange of the Connection.

Fourth—After all roofing felt has been laid and before the finished wearing surface is applied, the surface of the iron flange of the Connection shall be thoroughly cleaned and the copper flashing flange embedded

SIZE OF PIPE	A	B	C	D	E	F	G	H
3"	9 $\frac{1}{2}$ "	6 $\frac{3}{4}$ "	10 $\frac{1}{2}$ "	7 $\frac{1}{2}$ "	4 $\frac{3}{8}$ "	10 $\frac{3}{8}$ "	7 $\frac{1}{2}$ "	18"x18"
4"	10 $\frac{3}{8}$ "	8 $\frac{3}{8}$ "	11 $\frac{1}{8}$ "	8 $\frac{5}{8}$ "	5 $\frac{3}{8}$ "	12 $\frac{1}{4}$ "	9 $\frac{3}{8}$ "	20"x20"
5"	11 $\frac{1}{8}$ "	9 $\frac{1}{8}$ "	12 $\frac{1}{2}$ "	9 $\frac{1}{8}$ "	5 $\frac{1}{2}$ "	13 $\frac{1}{8}$ "	10 $\frac{1}{2}$ "	22"x22"
6"	12 $\frac{1}{4}$ "	10 $\frac{3}{8}$ "	13 $\frac{3}{4}$ "	10"	5 $\frac{3}{4}$ "	14 $\frac{1}{4}$ "	11 $\frac{3}{4}$ "	24"x24"
8"	THIS CONNECTION ON SPECIAL ORDER.							

DIMENSION TABLE



FRONT VIEW

SMOOTH SURFACE TYPE 2-LS

in Plastic Elastigum. If the flange is bent it shall be straightened and made smooth before being set in place. Flashing flange shall be nailed wherever possible. Iron gravel stop ring or strainer plate shall be set in Plastic Elastigum and firmly drawn down by brass nuts.

Fifth—The cast iron strainer shall be fastened in place (if a brass or aluminum strainer is desired it shall be specified).

Sixth—The copper Flashing Flange shall be thoroughly mopped with hot bitumen into which, while hot, the steep roofing shall be applied and brought up to the gravel stop or strainer plate.

Seventh—The valley roofing shall be laid and brought up to the gravel stop or strainer plate.

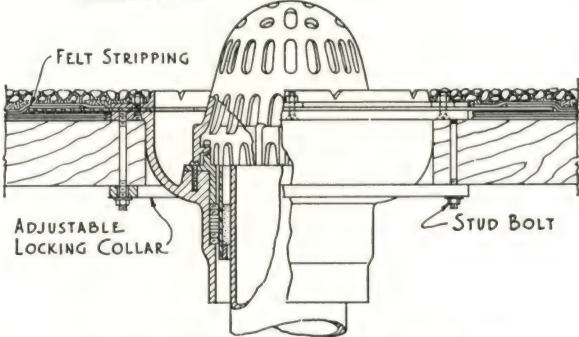
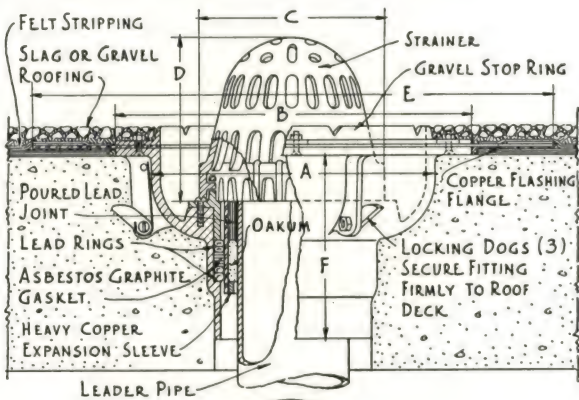
Eighth—The gland ring, gasket and expansion joint fitting shall be set in place and the last length of leader pipe cut to proper length and placed in position. The lower end of the expansion joint fitting shall be not less than fourteen (14) inches from the bottom of the veins on the side of the roof bowl.

Ninth—The gasket and gland ring shall be brought down into the expansion joint fitting, bolted and tightened sufficiently by the wing nuts to obtain a water-tight connection. The joint between the expansion joint and the leader pipe shall then be made.

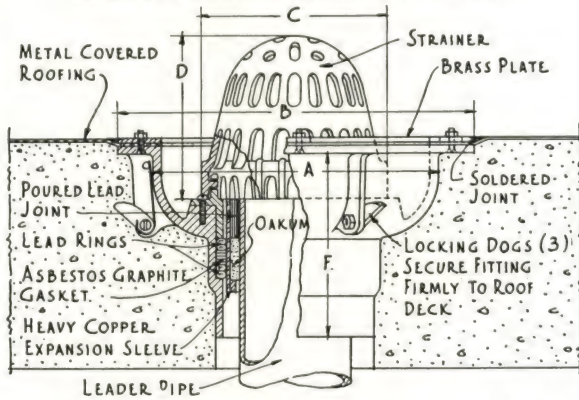
Barrett

BARRETT ROOF DRAINAGE SYSTEM

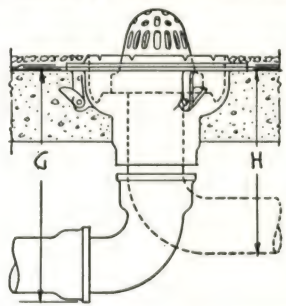
METHOD OF INSTALLING HOLT LEADER CONNECTIONS FOR TYPES 5-LG, 5-LS & 5-LM



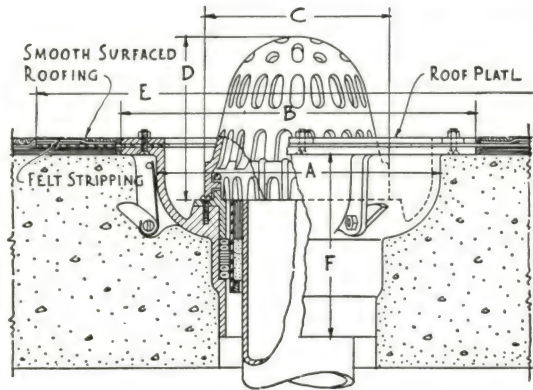
SLAG OR GRAVEL SURFACE TYPE 5-LG



METAL COVERED GUTTERS & ROOFS TYPE 5-LM



SIZE OF PIPE	G	H
3"	17 1/2"	11 1/2"
4"	18 1/4"	12"
5"	18 3/4"	12 1/2"
6"	19 1/4"	13"
8"	20"	13 1/2"



SMOOTH SURFACE TYPE 5-LS

NOTE—
STUD BOLTS AND ADJUSTABLE LOCKING COLLAR
USED ONLY FOR WOOD OR GYPSUM ROOF DECKS.

SIZE OF PIPE	A	B	C	D	E	F
3"	10 1/4"	12 5/8"	6 3/4"	6 1/8"	20"x20"	7"
4"	12 1/4"	14 5/8"	9 1/2"	8 1/2"	24"x24"	7"
5"	12 1/4"	14 5/8"	9 1/2"	8 1/2"	24"x24"	7"
6"	13 1/4"	15 5/8"	10 1/2"	9 1/2"	24"x24"	7"
8"	15 1/4"	17 5/8"	13"	11"	26"x26"	7"

DIMENSION TABLE

These types are used as leader connections on flat roofs having interior drainage, where a sump type of roof connection is desired.

SPECIFICATION

The opening through the roof deck shall be of proper size to receive the Roof Leader Connection and shall be concentric with the leader pipe.

Barrett Holt Roof Leader Connection Type shall be installed at all drainage outlets and shall be of proper size and length to connect to inch leader pipe as shown on Drawing No.....

Holt Roof Leader Connections shall be installed and connected complete in strict accordance with directions of the manufacturer.

Note—Where built-up roofing is used as a roof covering, two plies of felt thoroughly embedded in hot bitumen shall be applied over the entire copper flashing flange, the outer edge of the first ply to extend beyond the flange not less than three (3) inches and of the second ply not less than six (6) inches.

When used in connection with gypsum or wood roof decks, types 5LG, 5LS and 5LM Connections are equipped with threaded stud bolts which hold the adjustable locking collar in place.

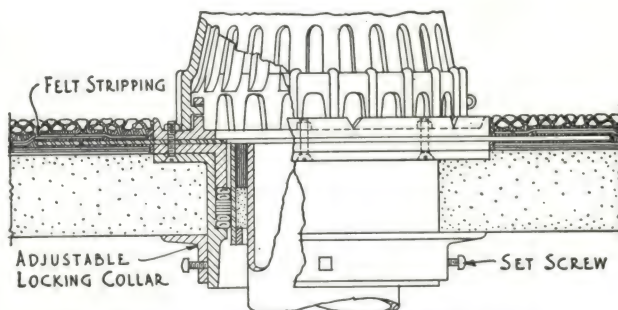
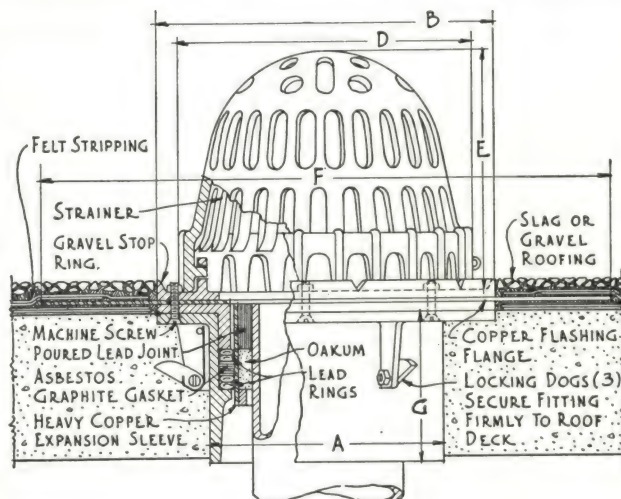




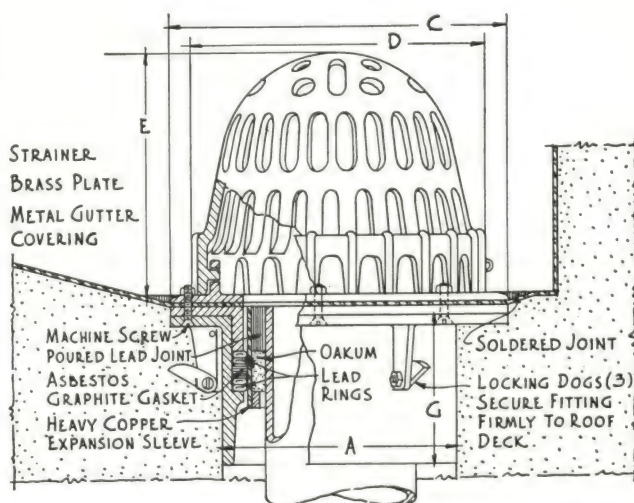
BARRETT ROOF DRAINAGE SYSTEM

METHOD OF INSTALLING HOLT LEADER CONNECTIONS

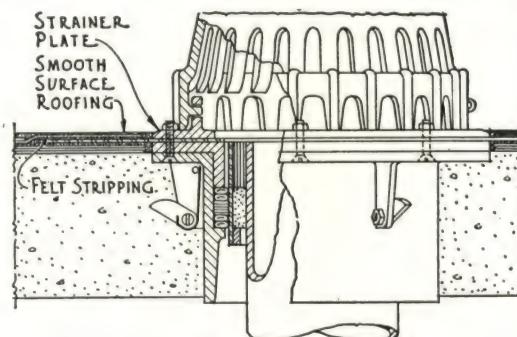
FOR TYPES 6-LG, 6-LS & 6-LM



SLAG OR GRAVEL SURFACE-TYPE 6-LG



METAL COVERED GUTTERS & ROOFS-TYPE 6-LM



SMOOTH SURFACE-TYPE 6-LS

SIZE OF PIPE	A	B+C	D	E	F	G
3"	6 1/4"	10 3/4"	9 1/2"	8 1/2"	16x16"	4 1/2"
4"	7 1/4"	10 3/4"	9 1/2"	8 1/2"	18x18"	4 1/2"
5"	8 1/4"	11 3/4"	10 1/2"	9 1/2"	20x20"	4 1/2"
6"	9 1/4"	11 3/4"	10 1/2"	9 1/2"	20x20"	4 1/2"
8"	11 1/4"	14 1/4"	13"	11"	24x24"	4 1/2"

DIMENSION TABLE

These types are used as leader connections on flat roofs having interior drainage, except roofs covered with tile or a similar material, and where working space below the roof deck is restricted.

SPECIFICATION

The opening through the roof deck shall be of proper size to receive the Roof Leader Connection and shall be concentric with the leader pipe.

Barrett Holt Roof Leader Connection Type shall be installed at all drainage outlets and shall be of proper size and length to connect to inch leader pipe as shown on Drawing No.

Holt Roof Leader Connections shall be installed and connected complete in strict accordance with directions of the manufacturer.

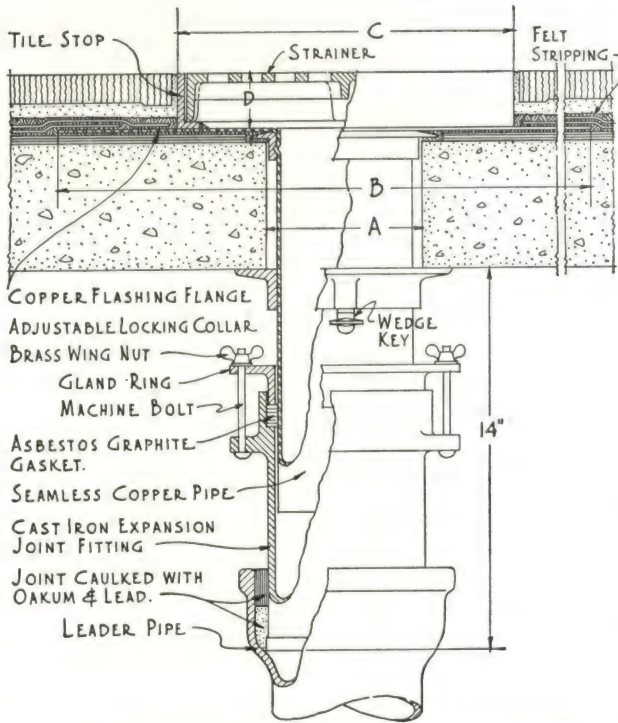
Where built-up roofing is used as a roof covering, two plies of felt thoroughly embedded in hot bitumen shall be applied over the entire copper flashing flange, the outer edge of the first ply to extend beyond the flange not less than three (3) inches and of the second ply not less than six (6) inches before application of finished surfacing.

Note—Where gypsum or wood roof deck exceeds 3 1/2 inches in thickness, types 6LG, 6LS and 6LM Connections are equipped with threaded stud bolts which hold the adjustable locking collar in place.

Barrett



BARRETT ROOF DRAINAGE SYSTEM METHOD OF INSTALLING HOLT LEADER CONNECTIONS TYPES 1-LT & 6-LT FOR TILE SURFACED ROOFS



SIZE OF PIPE	A	B	C	D
3"	4"	18"x18"	10 3/8"	3 1/4"
4"	5"	18"x18"	10 3/8"	TO 3 1/2"
5"	6"	18"x18"	10 3/8"	UNIT OF VARIATION
6"	7"	18"x18"	10 3/8"	1/4"
8"	9"	ON SPECIAL ORDER ONLY		
10"	11"			

DIMENSION TABLE

SPECIFICATION

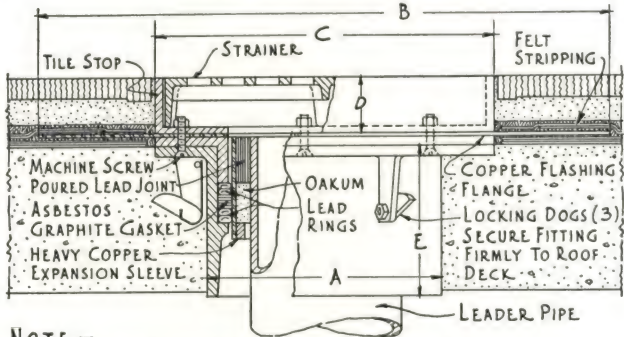
The opening through the roof deck shall be of proper size to receive the Roof Leader Connection and shall be concentric with leader pipe.

Barrett Holt Roof Leader Connection Type shall be installed at all drainage outlets and shall be of proper size and length to connect to ... inch leader pipe as shown on Drawing No.

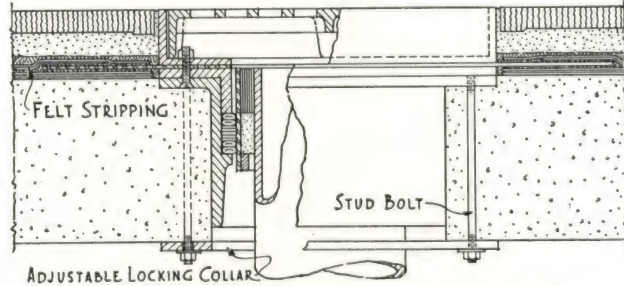
Holt Roof Leader Connections shall be installed and connected complete in strict accordance with directions of the manufacturer.

Before the application of the cement bed or the finished surfacing material, two plies of felt thoroughly embedded in hot bitumen shall be applied over the entire copper flashing flange, the outer edge of the first ply to extend beyond the flange not less than three (3) inches and of the second ply not less than six (6) inches.

TILE OR SIMILAR SURFACE-TYPE 1-LT

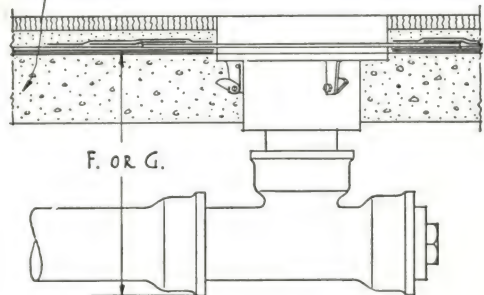


NOTE -
STUD BOLTS AND ADJUSTABLE LOCKING COLLAR
USED ONLY FOR WOOD OR GYPSUM ROOF DECKS.



TILE OR SIMILAR SURFACE-TYPE 6-LT

MATERIAL OF ROOF DECK DOES NOT CHANGE
MINIMUM DISTANCES (F. OR G.)



F - REFERS TO CAST IRON SOIL PIPE
G - REFERS TO WROUGHT IRON OR STEEL
SCREW PIPE.

SIZE OF PIPE	A	B	C	D	E	F	G
3"	6 1/4"	20"x20"	10 1/2"	1"	4 1/2"	15 1/4"	13 1/2"
4"	7 1/4"	20"x20"	10 1/2"	TO 3 1/2"	4 1/2"	15 3/4"	14 1/4"
5"	8 1/4"	20"x20"	10 1/2"	UNIT OF VARIATION	4 1/2"	16 1/4"	14 3/4"
6"	9 1/4"	20"x20"	10 1/2"	1/4"	4 1/2"	16 3/4"	15 1/4"
8"	11 1/4"	24"x24"	SPEC.		4 1/2"	17 3/4"	17 3/4"

DIMENSION TABLE

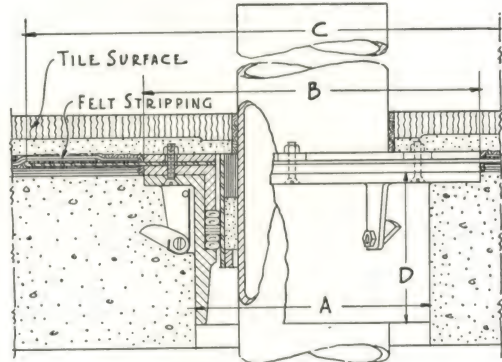
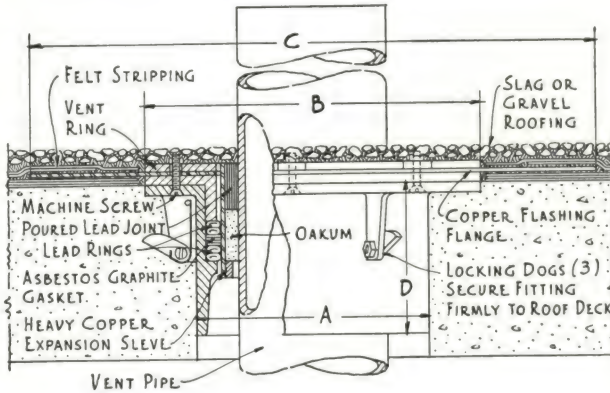




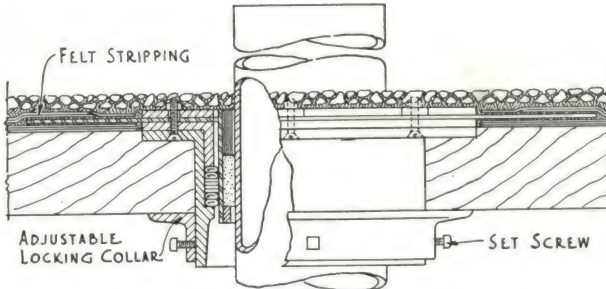
BARRETT ROOF DRAINAGE SYSTEM

METHOD OF INSTALLING HOLT VENT CONNECTIONS

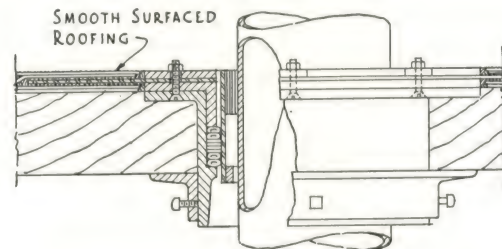
FOR TYPES 6-VG, 6-VS, 6-VT & 6-VM



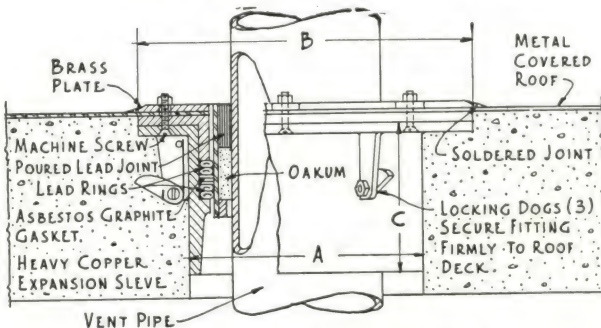
TILE OR SIMILAR SURFACE-TYPE 6-VT



SLAG OR GRAVEL SURFACE-TYPE 6-VG



SMOOTH SURFACE-TYPE 6-VS



METAL COVERED ROOFS-TYPE 6-VM

These types used on flat roofs for soil and waste vent stacks, flag-poles, supply pipes or any similar fixture carried through the roof deck.

SPECIFICATION

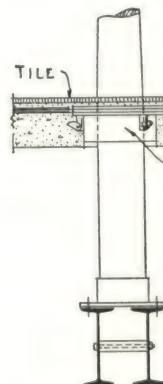
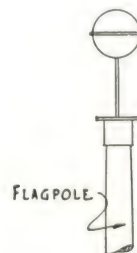
The opening through roof deck shall be of proper size to receive Roof Vent Connection and shall be concentric with vent pipe.

Barrett Holt Roof Vent Connection Type . . . shall be installed at all vent openings and shall be of proper size to connect with . . . inch vent pipe as shown on Drawing No. . . .

Holt Roof Vent Connections shall be installed and connected complete in strict accordance with directions of manufacturer.

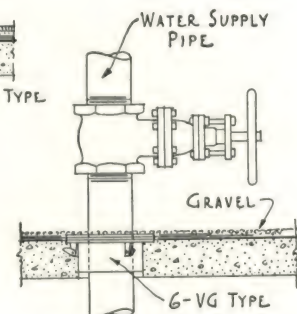
Where built-up roofing is used as a roof covering, two plies of felt thoroughly embedded in hot bitumen shall be applied over the entire copper flashing flange, the outer edge of the first ply to extend beyond the flange not less than three (3) inches and of the second ply not less than six (6) inches before the application of finished surfacing.

Note: Where gypsum or wood roof decks exceed 3 1/4 inches in thickness, Connections are equipped with threaded stud bolts which hold adjustable locking collar in place.



SIZE OF PIPE	A	B	C	D
3"	6 1/4"	8 3/4"	16"x16"	4 1/2"
4"	7 1/4"	9 3/4"	18"x18"	4 1/2"
5"	8 1/4"	10 3/4"	20"x20"	4 1/2"
6"	9 1/4"	11 3/4"	20"x20"	4 1/2"
8"	11 1/4"	14 3/8"	24"x24"	4 1/2"

DIMENSION TABLE



6-V TYPES CAN BE USED FOR WATER PIPES, FLAGPOLES, FIRE LINES, ETC.

Barrett

SECTION 5

Waterproofing and Dampproofing Specifications and Details

PART I—WATERPROOFING

WATERPROOFING in some form is essential to the life and stability of many structures. Just what this form should be is a problem not exactly determinable by precise mathematical calculation. However, with a careful study of conditions, with the knowledge of definite factors and with the help of past experience, a form or method of waterproofing may be devised for the specific conditions encountered. Proper waterproofing materials, intelligently selected and skillfully applied, are vital factors in making engineering structures watertight.

For most satisfactory results the use of the membrane method of waterproofing is recommended. This method correctly followed not only protects but prolongs the life of any structure, and has been successfully used over a long period of years. It provides an elastic and continuous bituminous waterproofing blanket, composed of layers of waterproofing felt or fabric, homogeneously cemented with suitable waterproofing bitumen.

The use of the membrane system applies generally to the waterproofing of structures exposed to hydrostatic

pressure or conditions of dampness or moisture, particularly those below ground surface, such as foundations of buildings, tunnels, subways, or other forms of sub-construction. It is equally adaptable to the waterproofing of reservoirs, bridges, retaining walls, etc.

The following specifications treat with specific conditions. The materials specified are prepared expressly for the purposes intended, and are definitely suited to the conditions under which they are required to function. The application methods described are accepted as standard practice.

Barrett Approved Waterproofing Contractors are skilled in the arts of waterproofing. Their employment on specific installations in accordance with the specifications outlined assures the obtaining of satisfactory results.

The services of our Construction Service Department are available for consultation or co-operation in the preparing of specifications or handling of unusual installations not incorporated in this section.



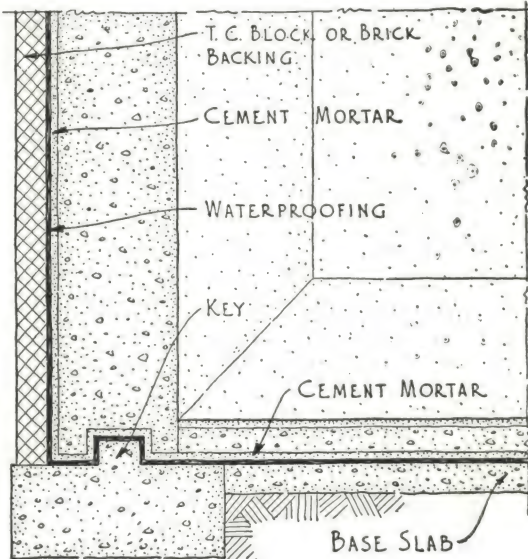
New York Hospital & Cornell Medical College, New York City—Roofed and Waterproofed with Barrett Materials



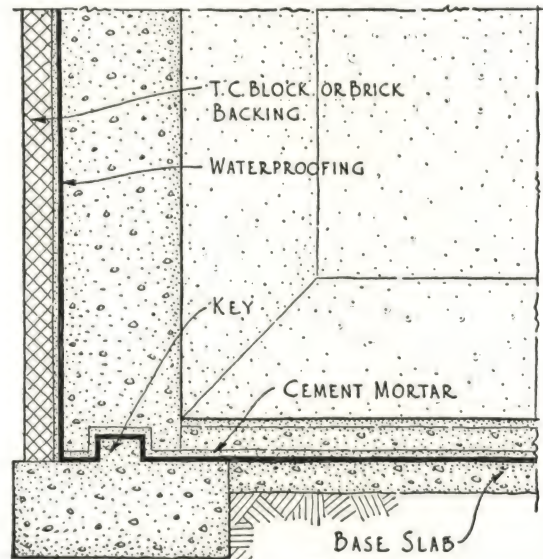
BARRETT WATERPROOFING SYSTEM

MEMBRANE METHOD

SUBSTRUCTURE WATERPROOFING



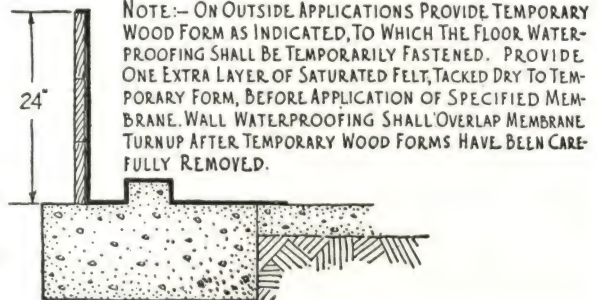
WATERPROOFING DETAIL FOR
OUTSIDE WALLS, FOOTINGS ETC.
- INSIDE APPLICATION -



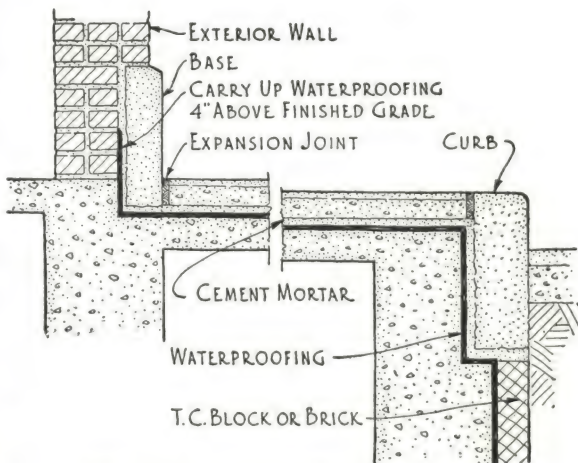
WATERPROOFING DETAIL FOR
OUTSIDE WALLS, FOOTINGS ETC.
- OUTSIDE APPLICATION -

NOTE :-
ON INSIDE APPLICATIONS WATERPROOFING MEMBRANE,
AS SPECIFIED, IS APPLIED DIRECTLY TO THE TILE OR BRICK
BACKING AS INDICATED

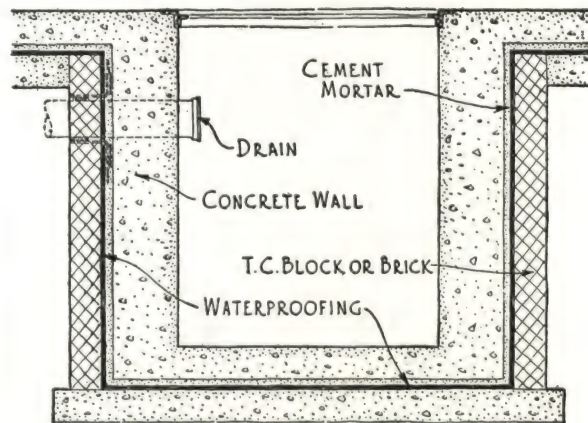
IMPORTANT -
ALL MASONRY SHALL BE DESIGNED TO WITHSTAND
THE MAXIMUM HYDROSTATIC PRESSURE.
SEE PLATE 36 FOR WATERPROOFING SPECIFICATIONS.



NOTE :- ON OUTSIDE APPLICATIONS PROVIDE TEMPORARY
WOOD FORM AS INDICATED, TO WHICH THE FLOOR WATER-
PROOFING SHALL BE TEMPORARILY FASTENED. PROVIDE
ONE EXTRA LAYER OF SATURATED FELT, TACKED DRY TO TEM-
PORARY FORM, BEFORE APPLICATION OF SPECIFIED MEM-
BRANE. WALL WATERPROOFING SHALL OVERLAP MEMBRANE
TURNUP AFTER TEMPORARY WOOD FORMS HAVE BEEN CARE-
FULLY REMOVED.



WATERPROOFING DETAIL FOR
VAULTS & TUNNELS



WATERPROOFING DETAIL FOR
SUMPS & PITS

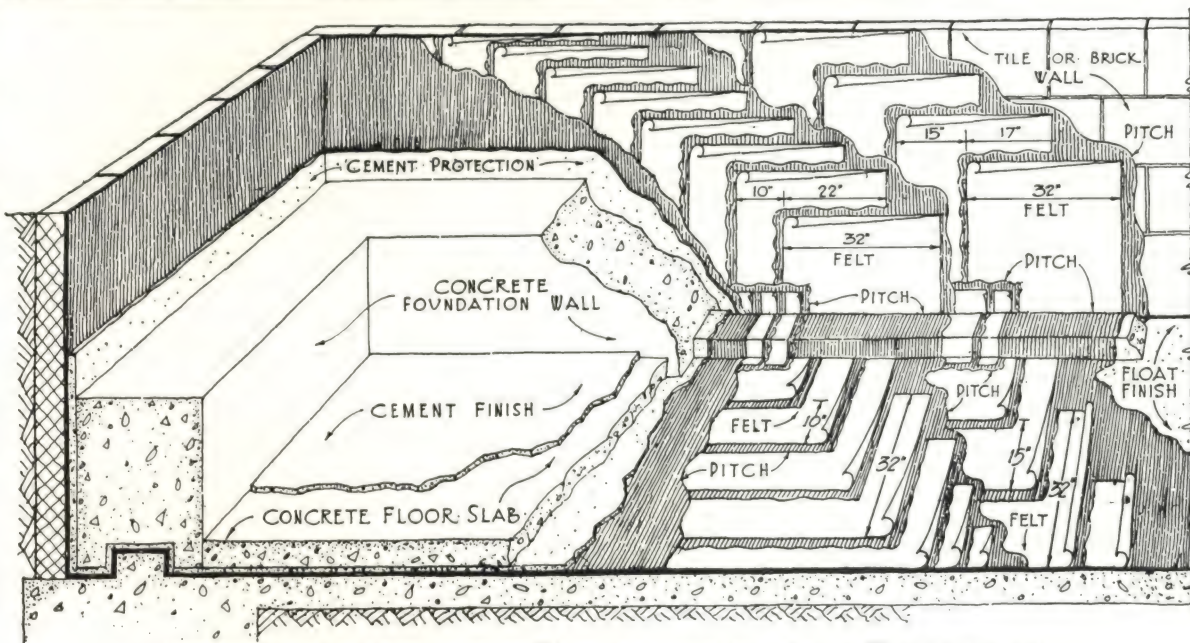
Barrett



BARRETT WATERPROOFING SYSTEM

MEMBRANE METHOD

SUBSTRUCTURE WATERPROOFING



DETAIL FOR SUBSTRUCTURE WATERPROOFING - 5 PLY CONSTRUCTION

IMPORTANT—All Masonry Shall be Designed to Withstand Maximum Hydrostatic Pressure

SPECIFICATION

The waterproofing shall be applied by a waterproofing contractor approved by THE BARRETT COMPANY, who has had experience in successfully applying this type of built-up waterproofing on sub-grade construction, and who can refer to work of a similar nature that he has executed in a satisfactory manner.

All surfaces on which the waterproofing is to be applied shall be firm, smooth and dry, and free from loose materials, and shall be covered by a membrane of continuous waterproofing consisting of plies of Barrett Tarred Felt and moppings of Barrett Waterproofing Pitch.

First—Coat the entire surface on which the waterproofing is to be applied, with Barrett Waterproofing Pitch into which, while hot, embed a layer of Barrett Tarred Felt, as specified, following this with alternating moppings of Pitch and layers of Felt until moppings of Pitch and layers of Felt have been applied. Each layer of Felt shall be thoroughly rubbed into the hot Pitch, and the entire surface shall be immediately mopped with Pitch to insure thorough embedding of the Felt. The Felt shall be laid without wrinkles or buckles, and the finished membrane shall be free from pockets or blisters.

Second—Not less than.....* pounds of Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing, and the Pitch shall not be heated above three hundred and fifty (350) degrees, Fahrenheit.

Third—At wall angles and footings and places where the waterproofing may be subjected to unusual strain, there shall be applied not less than two (2) extra reinforcing layers of Felt and alternating moppings of Pitch.

Fourth—Where laps are left to be connected, they shall be not less than ten (10) inches wide, and shall be temporarily protected by one-half ($\frac{1}{2}$) inch troweled course of Portland Cement Mortar. When connections with laps are made, laps shall be carefully cleaned, dry,

and mopped with Pitch before proceeding with the work.

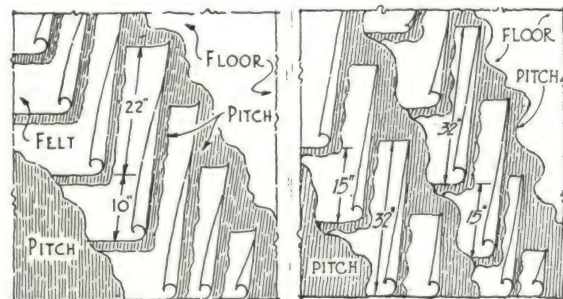
Fifth—Care shall be taken not to injure the waterproofing membrane either during application or after completion, and all finished work shall be approved before construction of permanent protective finish or wall.

Sixth—The waterproofing shall be immediately protected by tile, brick, concrete or similar material as specified.

**Architect's Note*—For five (5) ply construction six (6) alternating moppings of Pitch shall be required, and not less than two hundred and ten (210) pounds of Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing.

For four (4) ply construction five (5) alternating moppings of Pitch shall be required, and not less than one hundred and seventy-five (175) pounds of Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing.

For three (3) ply construction four (4) alternating moppings of Pitch shall be required, and not less than one hundred and forty (140) pounds of Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing.



DETAIL FOR 3 PLY CONSTRUCTION DETAIL FOR 4 PLY CONSTRUCTION

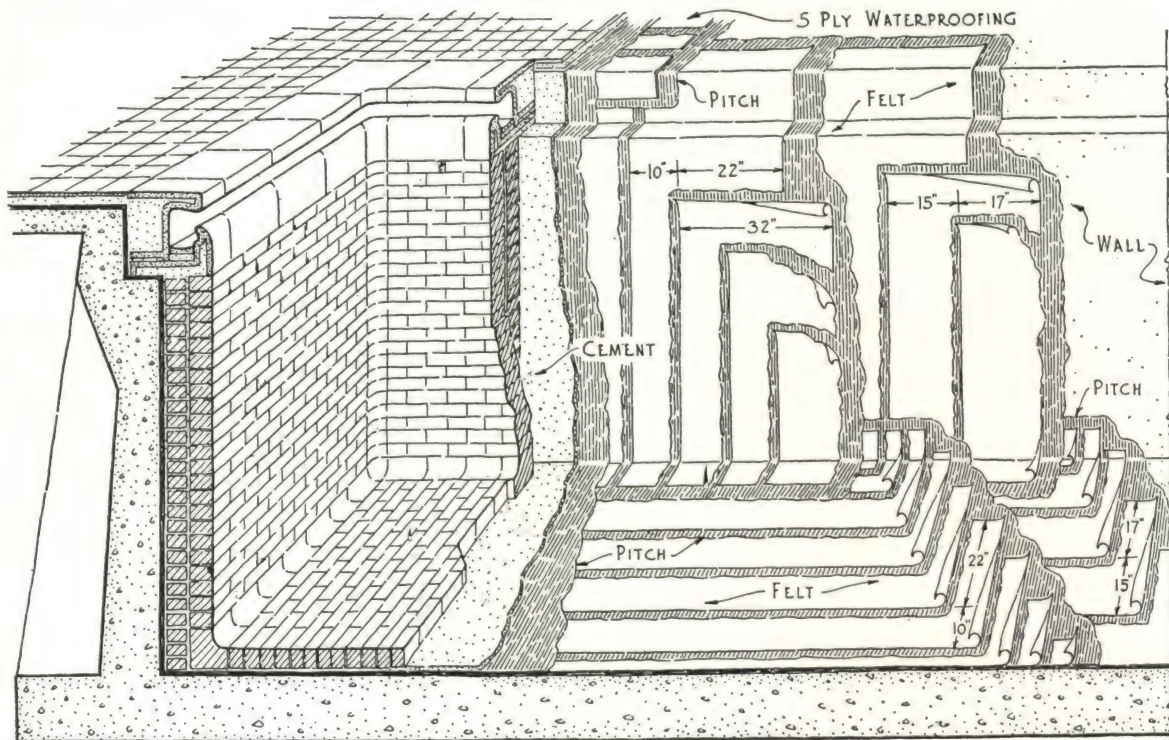
Barrett



BARRETT WATERPROOFING SYSTEM

MEMBRANE METHOD

FOR SWIMMING POOLS, SHOWER ROOMS ETC.



IMPORTANT—All Masonry Shall Be Designed To Withstand Maximum Hydrostatic Pressure

SPECIFICATIONS

The waterproofing shall be applied by a waterproofing contractor approved by THE BARRETT COMPANY, who has had experience in successfully applying this type of built-up waterproofing on swimming pool construction and who can refer to work of a similar nature that he has executed in a satisfactory manner.

All surfaces on which the waterproofing is to be applied shall be firm, smooth and dry, and free from loose materials, and shall be covered by a membrane of continuous waterproofing consisting of five (5) plies of Barrett Tarred Felt, as specified, and six (6) moppings of Barrett Waterproofing Pitch.

First—Coat the entire surface on which the waterproofing is to be applied with Barrett Waterproofing Pitch into which, while hot, lay two (2) plies of Barrett Tarred Felt, lapping each sheet seventeen (17) inches over preceding one, mopping with Barrett Waterproofing Pitch the full seventeen (17) inch lap on each sheet, so that in no place shall Felt touch Felt.

Second—Coat the entire surface uniformly with Barrett Waterproofing Pitch into which, while hot, lay three (3) plies of Barrett Tarred Felt, lapping each sheet twenty-two (22) inches over preceding one, mopping with Barrett Waterproofing Pitch the full twenty-two (22) inch lap on each sheet, so that in no place shall Felt touch Felt. All Felt shall be thoroughly and smoothly embedded into the hot Pitch, shall be laid without wrinkles or buckles, and the finished membrane shall be free from pockets or blisters.

Third—Coat the entire surface with a heavy uniform mopping of Barrett Waterproofing Pitch.

Fourth—Not less than two hundred and ten (210) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing and the Pitch shall not be heated above four hundred (400) degrees Fahrenheit.

Fifth—At wall angles and footings and places where the waterproofing may be subjected to unusual strain, there shall be applied not less than two (2) extra reinforcing layers of Felt and alternating moppings of Pitch.

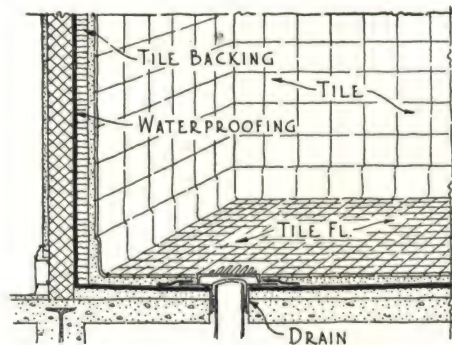
Sixth—Where laps are left to be connected, they shall be not less than ten (10) inches wide and shall be temporarily

protected by one-half ($\frac{1}{2}$) inch troweled course of Portland Cement Mortar. When connections with laps are made, laps shall be carefully cleaned, dry, and mopped with Pitch before proceeding with the work.

Seventh—Care shall be taken not to injure the waterproofing membrane either during application or after completion, and all finished work shall be approved before construction of permanent protective finish.

Eighth—The waterproofing shall be immediately protected by tile, brick, concrete or similar material (as specified) and a continuous course of at least one-half ($\frac{1}{2}$) inch of cement mortar, one to two mix, applied directly over the waterproofing membrane before such finished course is installed.

Note—Where swimming pool is provided with steam coil or hot water inlet, all such pipes shall be thoroughly insulated.



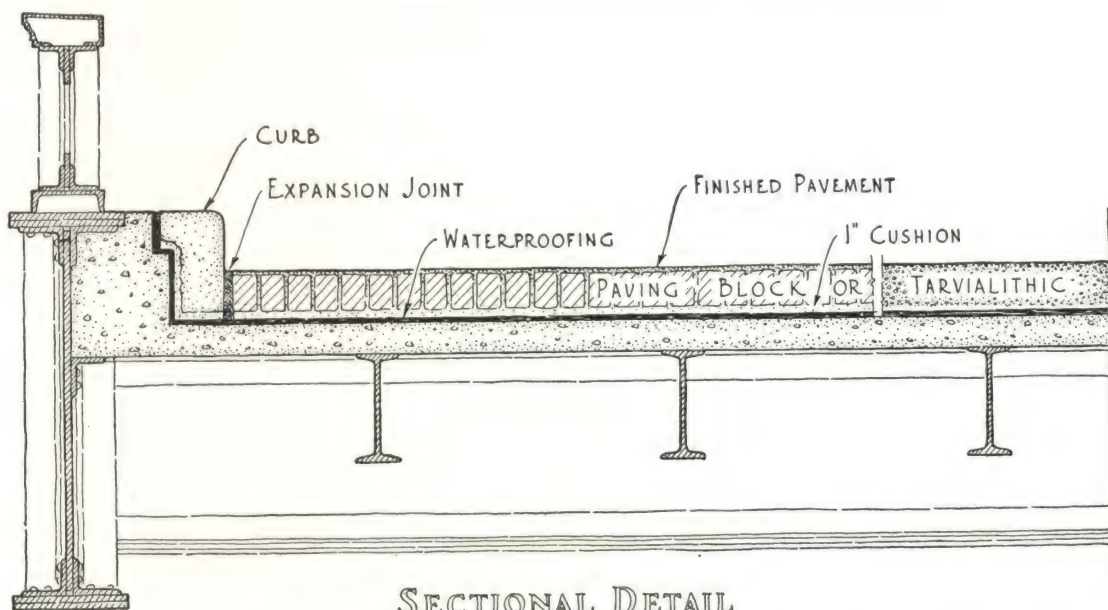
DETAIL FOR SHOWER ROOM

Barrett

BARRETT WATERPROOFING SYSTEM

MEMBRANE METHOD

FOR ELEVATED HIGHWAYS OR BRIDGES, RAMPS ETC



SECTIONAL DETAIL

SPECIFICATION

The waterproofing shall be applied by a Waterproofing Contractor approved by THE BARRETT COMPANY, who has had experience in successfully applying this type of Built-Up Waterproofing, and who can refer to work of a similar nature that he has executed in a satisfactory manner.

All surfaces on which the waterproofing is to be applied shall be firm, smooth, dry, and free from loose materials, and shall be covered by a membrane of continuous waterproofing consisting of plies of Barrett Tarred Felt, as specified and moppings of Barrett Waterproofing Pitch.

First—Coat the entire surface on which the waterproofing is to be applied, with Barrett Waterproofing Pitch, into which, while hot, embed a layer of Barrett Tarred Felt, following this with alternating moppings of Pitch and layers of Felt until moppings of Pitch and layers of Felt have been applied. Each layer of Felt shall be thoroughly rubbed into the hot Pitch, and the entire surface shall be immediately mopped with Pitch to insure thorough embedment of the Felt. The Felt shall be laid without wrinkles or buckles, and the finished membrane shall be free from pockets or blisters.

Second—Spread over the entire surface a heavy uniform coating of Barrett Waterproofing Pitch.

Third—Not less than* pounds of Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing, and the Pitch shall not be heated above three hundred fifty (350) degrees Fahrenheit.

Fourth—At wall angles, curbs, deflection joints, and places where the waterproofing may be subjected to unusual strain, there shall be applied not less than two (2) extra reinforcing layers of Felt and alternating moppings of Pitch.

Fifth—Where laps are left to be connected, they shall be not less than ten (10) inches wide and shall be temporarily protected by one-half ($\frac{1}{2}$) inch troweled coarse of Portland Cement Mortar. When connections with laps are made, laps shall be carefully cleaned, dry, and mopped with Pitch before proceeding with the work.

Sixth—Felt and Pitch membrane shall be carried up curbs, walls, and areas around columns, pipes, etc., not less than four (4) inches above the finished wearing surface.

Seventh—Care shall be taken not to injure the waterproofing membrane either during application or after completion,

Note—This specification covers application for waterproofing membrane of pitch and felt. For alternate types and details, see pages 56 and 59

and all finished work shall be approved before construction of permanent finished wearing surface.

Eighth—The finished wearing surface as specified, shall be immediately installed over the waterproofing membrane.

NOTES

1. Expansion joints shall be provided throughout the finished wearing surface. All such expansion joints shall extend from the top of the finished wearing surface through to the waterproofing membrane.

2. Where outlets or scuppers are provided as indicated on drawings, they shall be placed level with the waterproofing coarse and properly Felt-stripped.

*Architects' Note—For five (5) ply construction, Felt shall be laid after the two (2), two (2) and one (1) method, with alternating moppings of Waterproofing Pitch throughout. Not less than two hundred ten (210) pounds of Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed Waterproofing.

For four (4) ply construction not less than one hundred seventy-five (175) pounds of Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed Waterproofing.



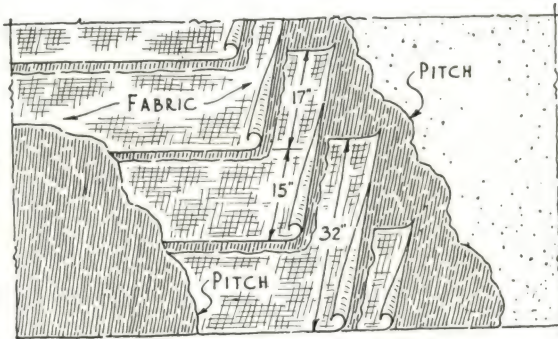
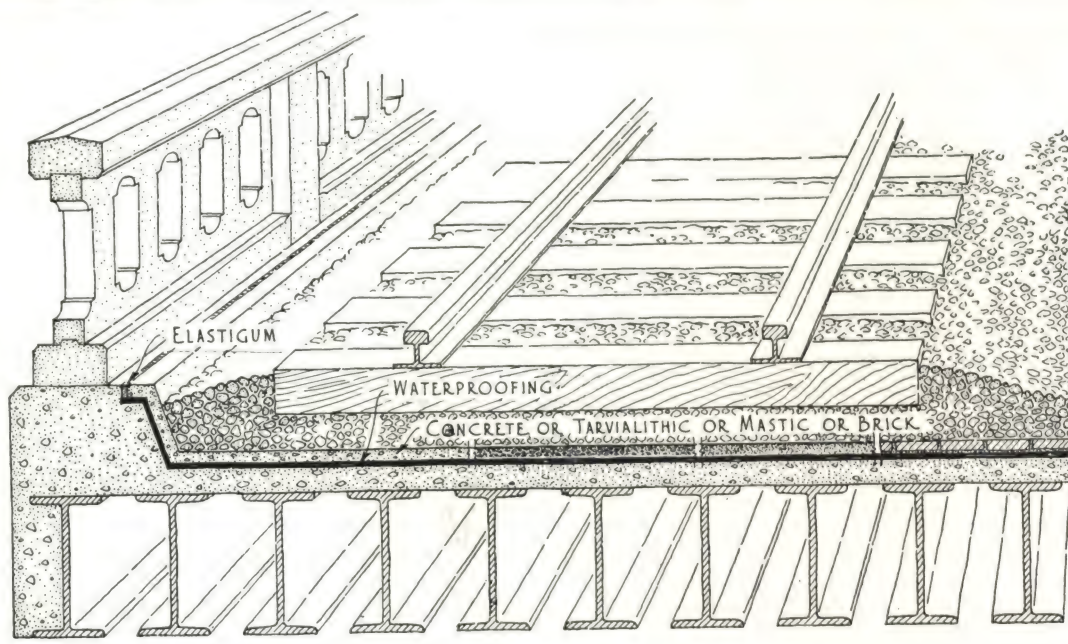
West Side Elevated Express Highway, New York, N. Y.

750,000 sq. ft. of Barrett waterproofing

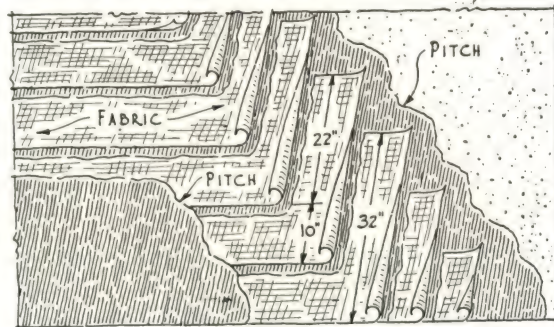
Barrett



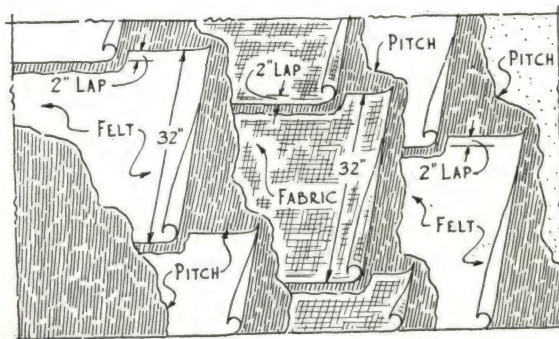
BARRETT WATERPROOFING SYSTEM MEMBRANE METHOD FOR SOLID DECK RAILROAD BRIDGES



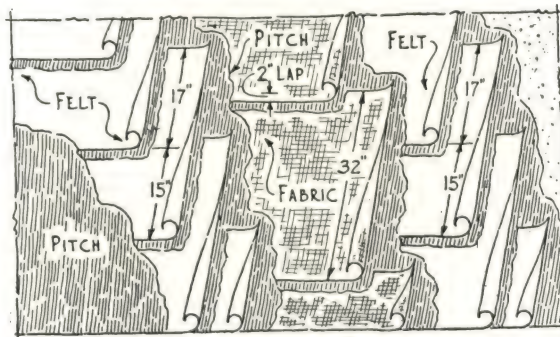
FABRIC TYPE - 2 PLY



FABRIC TYPE - 3 PLY



COMBINATION FELT & FABRIC - 3 PLY



COMBINATION FELT & FABRIC - 5 PLY

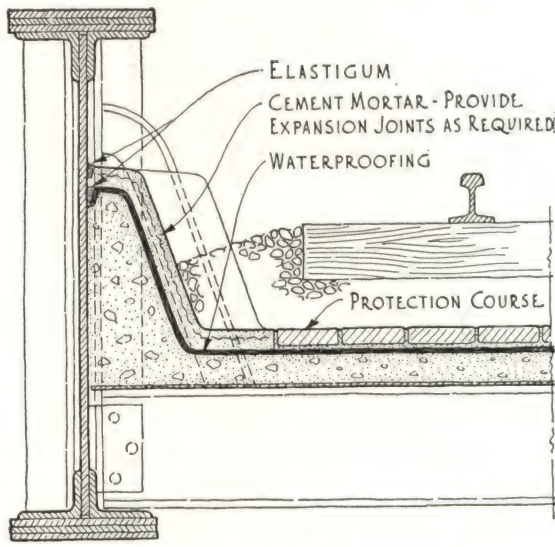
Barrett



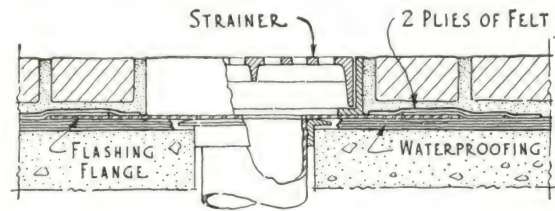
BARRETT WATERPROOFING SYSTEM

FLASHING DETAILS

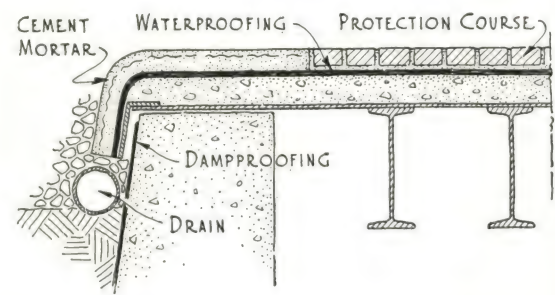
FOR SOLID DECK RAILROAD BRIDGES



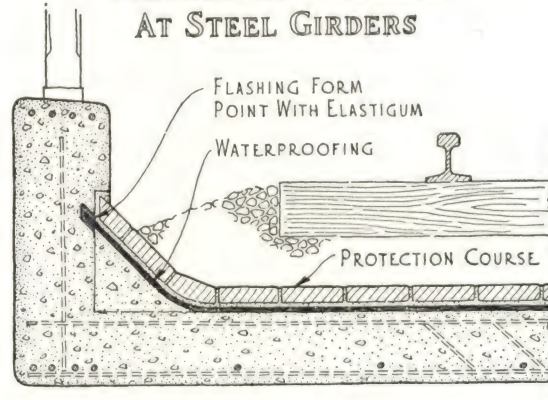
METHOD OF FLASHING
AT STEEL GIRDERS



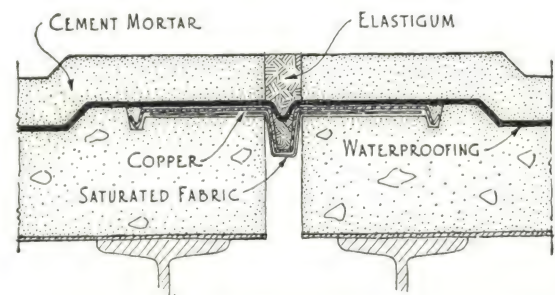
DETAIL OF DECK DRAIN



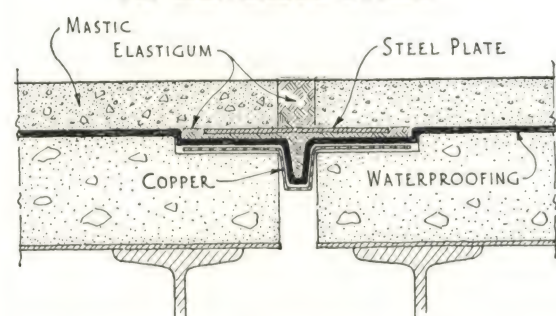
DETAIL OF WATERPROOFING
AT EXPANSION END



METHOD OF FLASHING
AT CONCRETE CURBS



DETAIL OF EXPANSION JOINT
CONCRETE PROTECTION COURSE



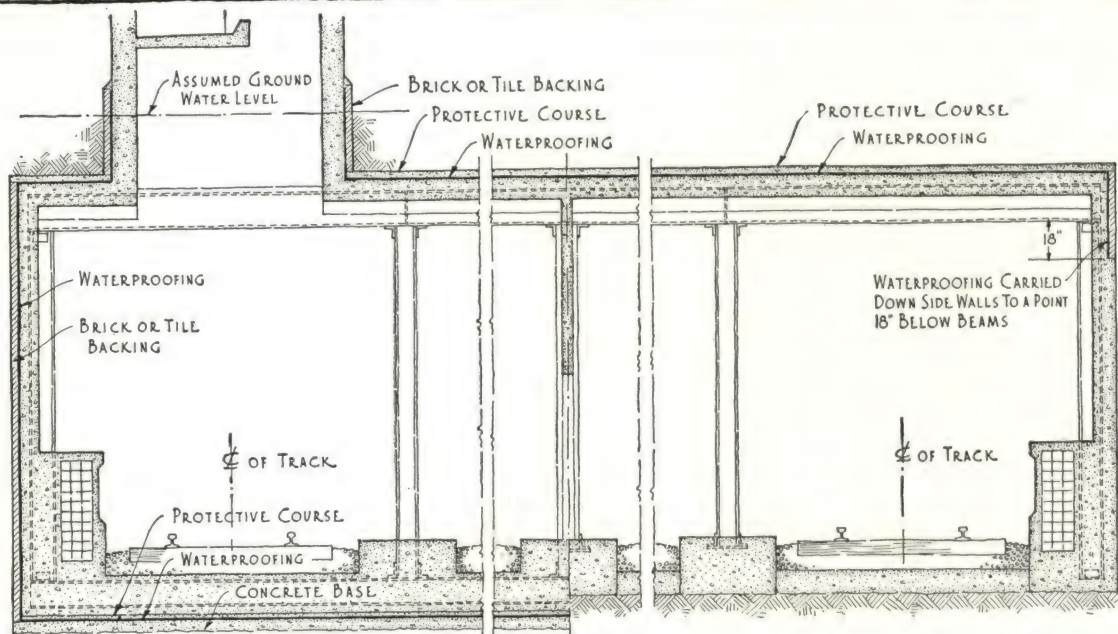
DETAIL OF EXPANSION JOINT
MASTIC PROTECTION COURSE

The membrane method of waterproofing is recommended for use on solid deck railroad bridges or other bridges, ramps, highways, etc. The types detailed conform to methods recommended by the American Railway Engineering Association, and incorporate the use of Barrett Waterproofing Pitch and/or Tarred Felt and/or Waterproofing Fabric. Architect or Engineer shall clearly indicate type to be used and specifications shall follow A.R.E.A. standards or form as outlined on Page 55.





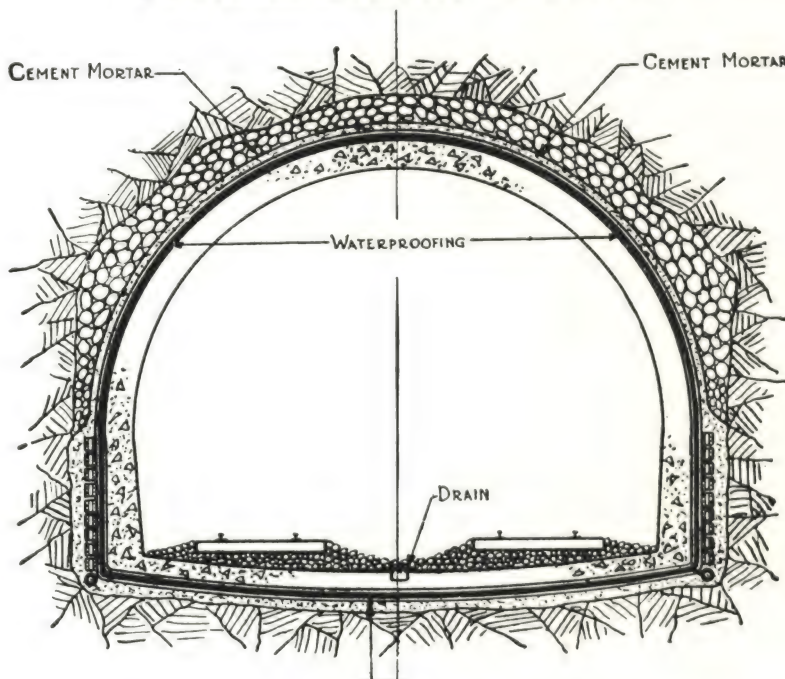
BARRETT WATERPROOFING SYSTEM MEMBRANE METHOD FOR UNDERGROUND SUBWAYS, TUNNELS, ETC.



1/2 SECTION SHOWING PROTECTION
AGAINST WATER PRESSURE

1/2 SECTION SHOWING PROTECTION
AGAINST SURFACE WATER

TYPICAL SUBWAY SECTIONS



TYPICAL TUNNEL SECTION

Note—For types of membrane waterproofing and specification form, refer to pages 53, 56 and 57.

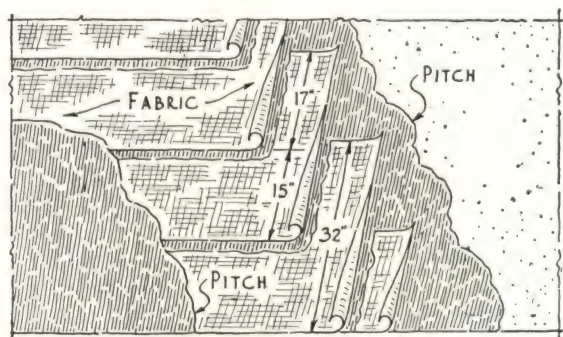
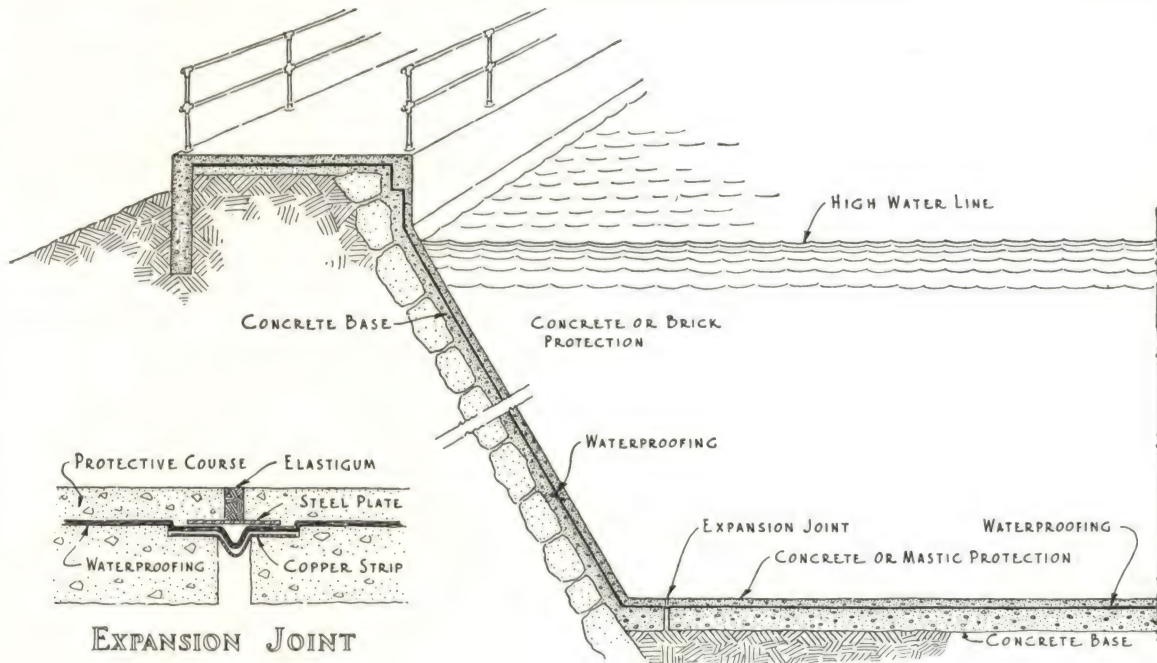
Barrett's



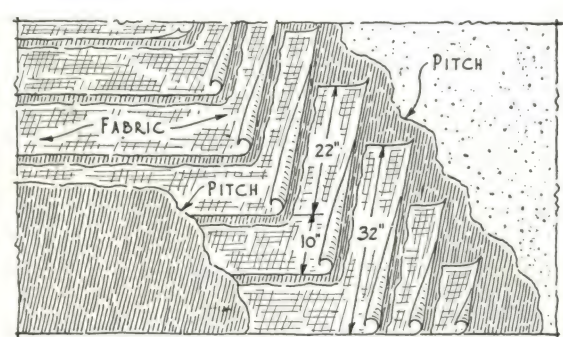
BARRETT WATERPROOFING SYSTEM

MEMBRANE METHOD

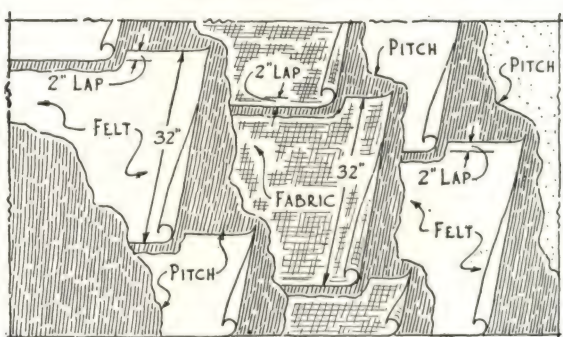
FOR RESERVOIRS, BASINS, ETC.



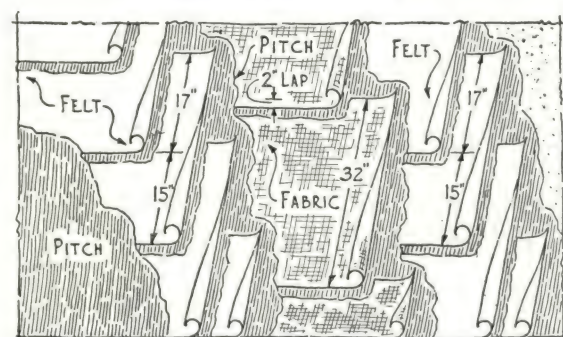
FABRIC TYPE - 2 PLY



FABRIC TYPE - 3 PLY



COMBINATION FELT & FABRIC - 3 PLY



COMBINATION FELT & FABRIC - 5 PLY

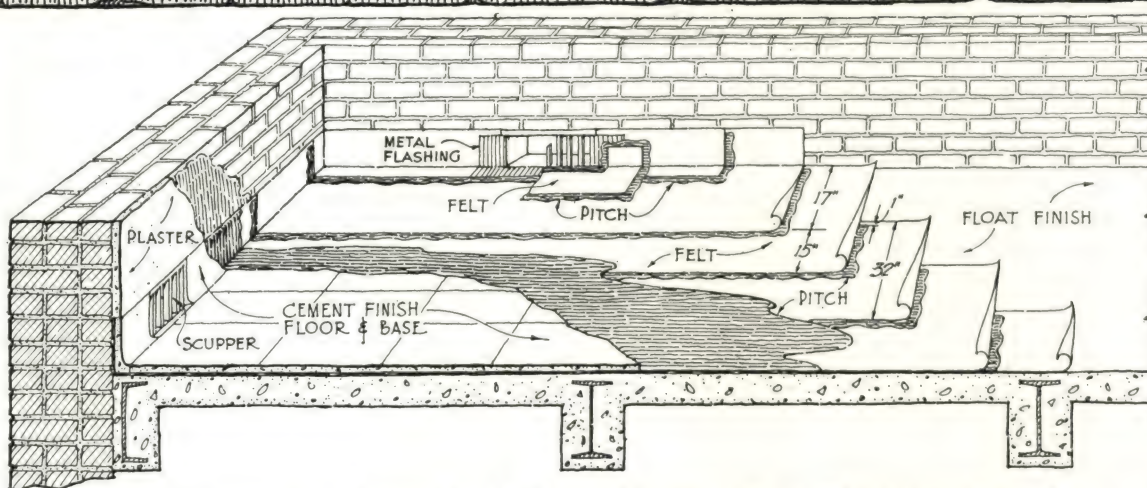
Note—For additional types of membrane waterproofing and specification form, refer to pages 54, 56 and 57.



BARRETT WATERPROOFING SYSTEM

MEMBRANE METHOD

FOR SUPERSTRUCTURE, CONCRETE OR WOOD FLOORS



This System of Waterproofing is Designed for the Purpose of Providing a Factor of Safety Against Water Damage From Operation of Sprinkling System, or in Case of Fire, Washing of Floors, etc.

SPECIFICATION

First—Over the entire surface lay two (2) plies of Barrett Tarred Felt, as specified, lapping each sheet seventeen (17) inches over preceding one, mopping with Barrett Waterproofing Pitch the full seventeen (17) inch lap on each sheet, so that at no place, shall Felt touch Felt; after which spread over the entire surface a heavy uniform coating of Specification Pitch.

Second—Not less than seventy-five (75) pounds of Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing, and the Pitch shall not be heated above four hundred (400) degrees Fahrenheit.

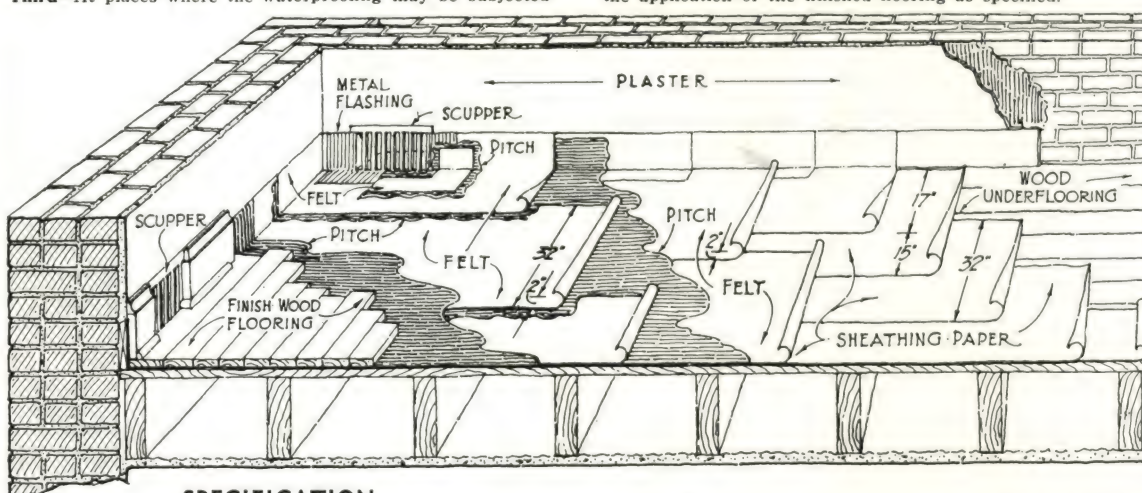
Third—At places where the waterproofing may be subjected

to unusual strain, there shall be applied not less than two (2) extra reinforcing layers of Felt and alternating moppings of Pitch.

Fourth—Felt and Pitch membrane shall be carried up walls and areas around columns, pipes, etc., not less than three (3) inches above the finished flooring, and shall be properly fastened in place and protected.

Fifth—Care shall be taken not to injure the waterproofing membrane either during application or after completion, and all finished work shall be approved before construction of permanent finished flooring.

Sixth—The waterproofing shall be immediately protected by the application of the finished flooring as specified.



SPECIFICATION

First—Over the entire surface lay two (2) thicknesses of sheathing paper or unsaturated felt, weighing not less than five (5) pounds per one hundred (100) square feet, lapping each sheet seventeen (17) inches over the preceding one, and nail as often as is necessary to hold in place.

Second—Over the entire surface lay one (1) ply of Barrett Tarred Felt as specified, lapping each sheet two (2) inches over preceding one and nail as often as is necessary to hold in place.

Third—Coat the entire surface uniformly with Barrett Waterproofing Pitch, after which over the entire surface lay one (1) ply of Barrett Tarred Felt, lapping each sheet two (2) inches over preceding one, and mopping the two (2) inch lap on each sheet with Barrett Waterproofing Pitch, so that at no places shall Felt touch Felt. Care shall be taken that all layers of Felt break joints with underlying layers.

Fourth—Over the entire surface spread a heavy uniform coating of Barrett Waterproofing Pitch, into which, while hot, embed floor plank.

Fifth—Not less than seventy-five (75) pounds of Barrett Waterproofing Pitch shall be used for constructing each one hundred (100) square feet of completed waterproofing, and the Pitch shall not be heated above four hundred (400) degrees, Fahrenheit.

Sixth—(Same as paragraph "Third" at top of page.)

Seventh—(Same as paragraph "Fourth" at top of page.)

Eighth—(Same as paragraph "Fifth" at top of page.)

Ninth—The waterproofing shall be immediately protected by the application of the finished flooring as specified. Each plank shall be set in permanent position before nailing to prevent the nails from tearing the waterproofing membrane, and in no case shall the nails penetrate the flooring upon which the waterproofing rests.

Barrett

SECTION 5

PART 2—DAMPPROOFING

DAMPPROOFING is designed to prevent the penetration of moisture or dampness . . . and may be distinguished from waterproofing in that constant "heads" or hydrostatic pressures are not involved.

Dampproofing may be generally visualized as applying to walls or surfaces exposed to moisture above grade, and to substructure surfaces where dampness . . . and not hydrostatic pressure . . . exists. The materials or methods employed should provide for the primary function of dampproofing systems . . . that of keeping walls dry . . . should prevent discoloration, and where interior finishes obtain, should provide for the securing of a firm



First National Bank, New York, N. Y.
Roofed, waterproofed and dampproofed with
Barrett materials

bond between the walls, to which the dampproofing is applied, and the succeeding coats of plaster or other interior wall finish.

The dampproofing products and application methods referred to in these pages have been developed out of extensive research and experience. They provide for a continuity of covering, retard discoloration and assure a firm bond. The specifications outlined are accepted as standard practice . . . adaptable to structures during construction or after erection. Best results may be obtained by following the specification procedure outlined and by the employment of experienced applicators in the execution of the work.



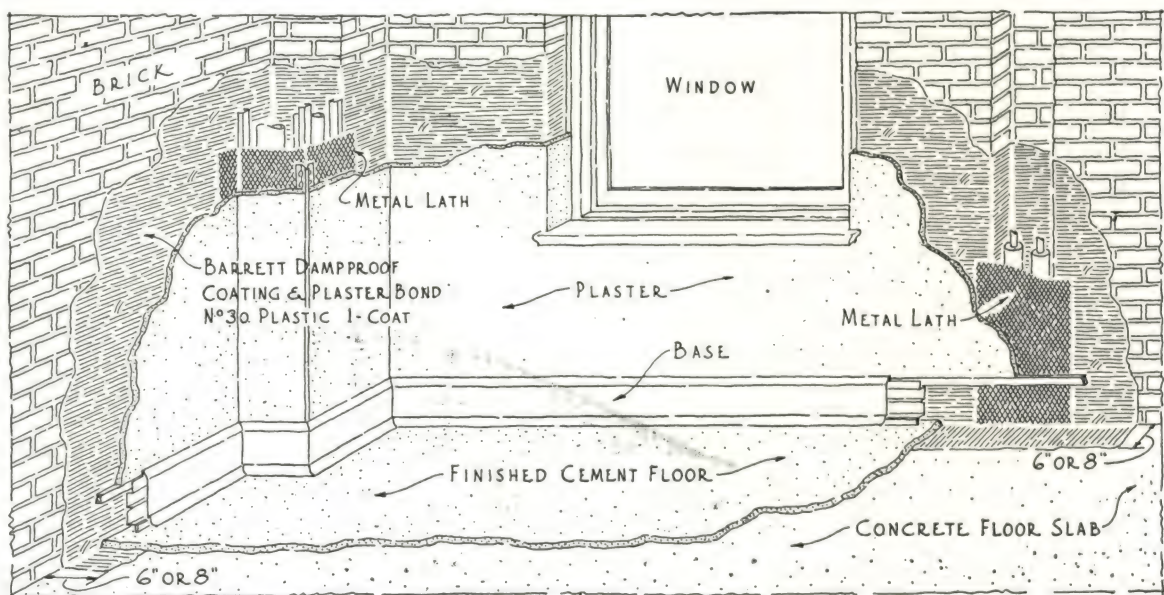
The St. Louis Municipal Auditorium and Civic Center, St. Louis, Mo.—Barrett Roofing and Dampproofing



BARRETT DAMPPROOFING SYSTEM

DAMPPROOF COATING & PLASTER BOND, PLASTIC METHOD

FOR EXTERIOR BRICK WALLS ABOVE GRADE



SPECIFICATION

Masonry—All holes and voids in the wall surfaces to be dampproofed shall be carefully filled with portland cement mortar and all joints struck flush. The walls shall be thoroughly dry, and free from oil, grease, excess cement mortar or other foreign matter that might interfere with the bonding and penetrating properties of the dampproof coating.

Application of Dampproofing—The interior surfaces of all exterior brick (or hollow tile) walls, including reveals of doors and windows, column coverings and pipe chases, shall be dampproofed with one thorough and uniform trowel coat, of an average thickness of one-sixteenth ($\frac{1}{16}$) inch, using Barrett Dampproof Coating and Plaster Bond No. 30 Plastic.

The single coat of Plastic Dampproofing shall be applied evenly and carefully, being thoroughly worked into all joints, crevices, cracks between mortar and brick, cut-outs, wall chases and recesses, so as to form a continuous impervious coating without holidays, pinholes or brown spots.

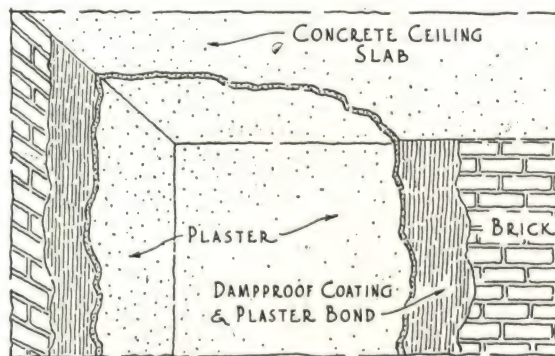
The Dampproof Coating shall be applied before any pipes or metal work are installed; and it shall completely cover the inside surfaces of all walls, as above, being carried out six (6) to eight (8) inches on rough floor slabs.

Plastering—The rough or scratch coat of wall plaster shall be applied directly to the dampproofing material not less than twenty-four (24) hours nor more than seven (7) days after the latter has been applied to the walls.

Note: Do not use Barrett Dampproof Coatings on ceilings. Where these materials are to be used in conjunction with stucco or portland cement mortar wall finishes, special application instructions shall be obtained either from the Architect or from THE BARRETT COMPANY.

Condensed Specification

The interior surfaces of all exterior walls of brick (or hollow tile), above grade, shall be dampproofed with Barrett Dampproof Coating and Plaster Bond No. 30 Plastic, applied in one trowel coat, in strict accordance with the specifications published by THE BARRETT COMPANY.



SHOWING DAMPPROOF COATING
CARRIED UP TO CEILING

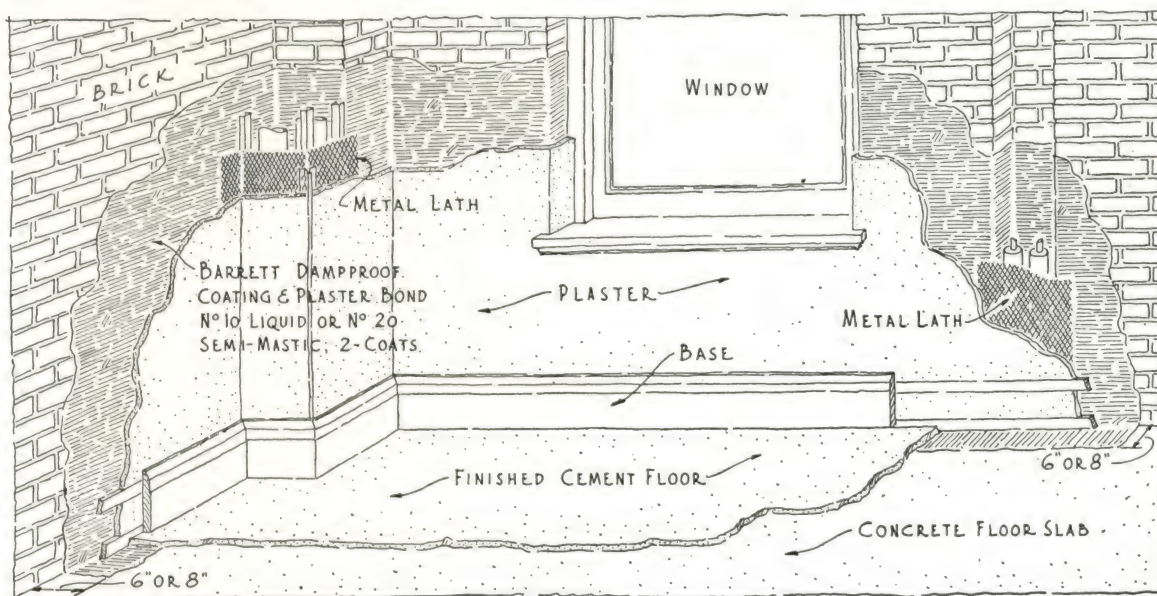
Barrett



BARRETT DAMPPROOFING SYSTEM

DAMPPROOF COATING AND PLASTER BOND METHOD

FOR EXTERIOR BRICK WALLS, ABOVE GRADE



SPECIFICATION

Masonry—All holes and voids in the wall surfaces to be dampproofed shall be carefully filled with portland cement mortar and all joints struck flush. The walls shall be thoroughly dry, and free from oil, grease, excess cement mortar or other foreign matter that might interfere with the bonding and penetrating properties of the dampproof coating.

Application of Dampproofing—The interior surfaces of all exterior walls of brick, including reveals of doors and windows, column coverings and pipe chases, shall be dampproofed with two thorough applications of Barrett Dampproof Coating and Plaster Bond No. 10 Liquid, applied by brush or by compressed air spray (or with two thorough applications of Barrett Dampproof Coating and Plaster Bond No. 20 Semi-Mastic, applied by heavy brush, mop or squeegee).

The first coat shall be applied thoroughly and evenly until the surface presents a uniform black appearance, care being taken to completely coat all joints, crevices, cut-outs, wall chases and recesses, so as to form a continuous impervious film without holidays, pinholes or brown spots.

After the first coat of dampproofing has been ap-

plied, at least twelve (12) hours shall elapse before application of the final coat.

The dampproofing shall be applied before any pipes or metal work are installed; and both coats shall completely cover the inside surfaces of all walls, as above, being carried out six (6) to eight (8) inches on rough floor slabs.

Plastering—The rough or scratch coat of wall plaster shall be applied directly to the final coat of dampproofing material, but not less than twenty-four (24) hours nor more than seven (7) days after the latter has been applied.

Note: Do not use Barrett Dampproof Coatings on ceilings. Where these materials are to be used in conjunction with stucco or portland cement mortar wall finishes, special application instructions shall be obtained either from the Architect or from THE BARRETT COMPANY.

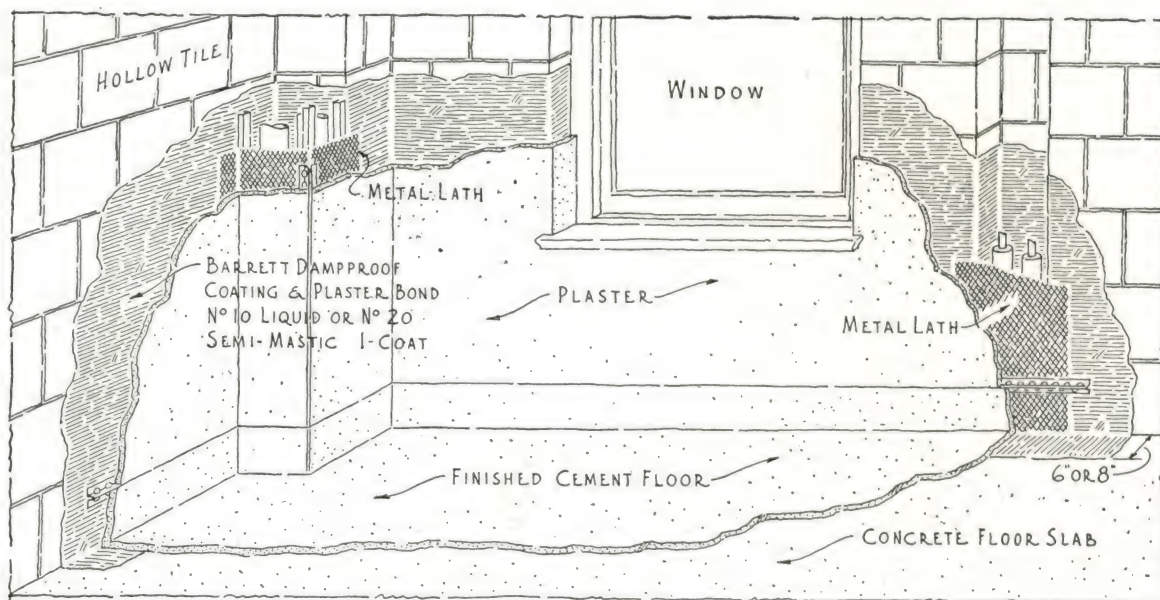
Condensed Specifications

The interior surfaces of all exterior brick walls, above grade, shall be dampproofed with Barrett Dampproof Coating and Plaster Bond No. 10 Liquid (or No. 20 Semi-Mastic), applied strictly in accordance with the specifications published by THE BARRETT COMPANY.

Barrett



BARRETT DAMPPROOFING SYSTEM DAMPROOF COATING AND PLASTER BOND METHOD FOR HOLLOW TILE WALLS ABOVE GRADE



SPECIFICATION

Masonry—All holes and voids in the wall surfaces to be dampproofed shall be carefully filled with portland cement mortar and all joints struck flush. The walls shall be thoroughly dry and free from oil, grease, excess cement mortar or other foreign matter that might interfere with the bonding and penetrating properties of the dampproof coating.

Application of Dampproofing—The interior surfaces of all exterior walls of hollow tile, including reveals of doors and windows, column coverings and pipe chases, shall be dampproofed with one thorough application of Barrett Dampproof Coating and Plaster Bond (No. 10 Liquid, No. 20 Semi-Mastic or No. 30 Plastic).

No. 10 Liquid shall be applied by brush or by compressed air spray. No. 20 Semi-Mastic shall be applied by heavy brush, mop or squeegee. No. 30 Plastic shall be applied by trowel to an average thickness of one-sixteenth ($\frac{1}{16}$) inch.

The coating shall be applied thoroughly and evenly until the surface presents a uniform black appearance, care being taken to completely coat all joints, crevices, cut-outs, wall chases and recesses, so as to form a continuous impervious film without holidays, pinholes or brown spots.

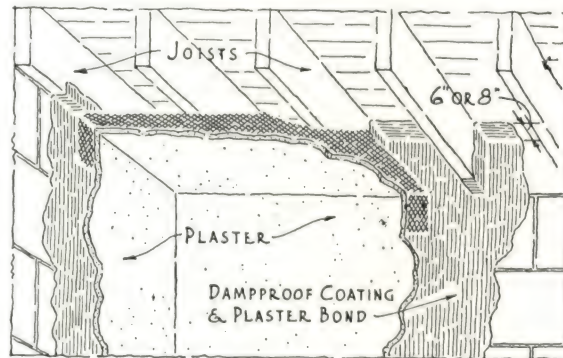
The dampproofing shall be applied before any pipes or metal work are installed and shall completely cover the inside surfaces of all walls, as above, being carried out six (6) to eight (8) inches on rough floor slabs.

Plastering—The rough or scratch coat of wall plaster shall be applied directly to the dampproofing, but not less than twenty-four (24) hours nor more than seven (7) days after the latter has been applied.

Note: Do not use Barrett Dampproof Coatings on ceilings. Where these materials are to be used in conjunction with stucco or portland cement mortar wall finishes, special application instructions shall be obtained either from the Architect or from THE BARRETT COMPANY.

Condensed Specification

The interior surfaces of all exterior walls of hollow tile, above grade, shall be dampproofed with one (1) coat of Barrett Dampproof Coating and Plaster Bond (No. 10 Liquid, No. 20 Semi-Mastic, or No. 30 Plastic) applied strictly in accordance with the specifications published by THE BARRETT COMPANY.



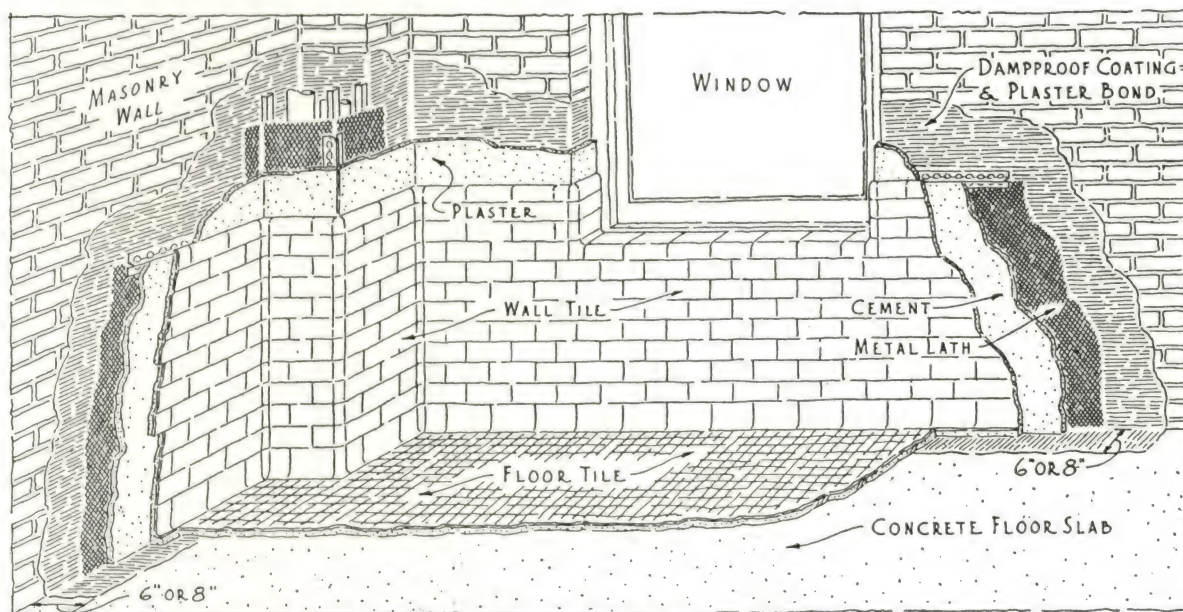
SHOWING DAMPROOF COATING
CARRIED OUT ON WOOD JOIST CEILING

Barrett



BARRETT DAMPPROOFING SYSTEM

METHOD OF APPLYING TILE OVER DAMPPROOF COATING AND PLASTER BOND



METAL LATH METHOD

SPECIFICATION

Masonry—All holes and voids in the wall surfaces to be dampproofed shall be carefully filled with portland cement mortar and all joints struck flush. The walls shall be thoroughly dry and free from oil, grease, excess cement mortar or other foreign matter that might interfere with the bonding and penetrating properties of the dampproof coating.

Application of Dampproofing—The interior surfaces of all exterior walls of brick, including reveals of doors and windows, column coverings and pipe chases, shall be dampproofed with two thorough applications of Barrett Dampproof Coating and Plaster Bond No. 10 Liquid applied by brush or by compressed air spray; or with two thorough applications of Barrett Dampproof Coating and Plaster Bond No. 20 Semi-Mastic applied by heavy brush, mop or squeegee; or by one thorough trowel coat of Barrett Dampproof Coating and Plaster Bond No. 30 Plastic applied to an average thickness of one-sixteenth ($\frac{1}{16}$) inch.

(Where walls are of hollow tile, only one (1) coat of No. 10 Liquid or No. 20 Semi-Mastic shall be required.)

The dampproofing shall be applied thoroughly and evenly until the surface presents a uniform black appearance, care being taken to completely coat all joints, crevices, cut-outs, wall chases, recesses, etc., so as to form a continuous impervious film without holidays, pinholes or brown spots. The dampproof coating shall be applied before any pipes or metal work are installed and shall completely cover the inside surfaces of all walls, as above, being carried out six (6) to eight (8) inches on rough floor slabs.

Where two coats are required, at least twelve (12) hours shall elapse between the first and second applications.

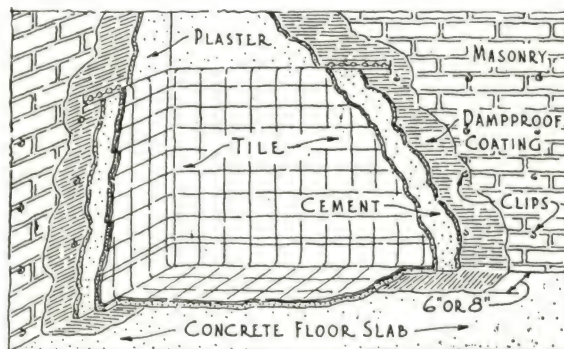
Metal Lath—Metal lath, as specified by the Architect, shall be applied to all wall surfaces which have been dampproofed as above and which are to be finished with tile. In the case of pipe chases and cut-outs in which piping, conduits, or metal work have been installed, the metal lath shall be placed on the outside of and around such piping, conduits or metal work so that the lath will provide a backing for the reception of the wall tile and will partially support its weight.

Application of Tile—The tile shall be applied to the metal lath, as above, by means of portland cement mortar.

Alternate or Clip Method—In this method, metal clips of a size, shape and spacing as may be specified by the architect, are inserted into the brick or hollow tile wall as it is constructed. The dampproof coating is applied, as below, to the interior surfaces of the walls; and the tile set in cement mortar placed directly over the dampproof coating, the metal clips serving, in addition to the natural bonding properties of the dampproof coating, to partially support the tile.

CONDENSED SPECIFICATION

The interior surfaces of all exterior walls of brick or hollow tile, which are to be finished in tile, shall be dampproofed with Barrett Dampproof Coating and Plaster Bond No. 10 Liquid, No. 20 Semi-Mastic or No. 30 Plastic, applied strictly in accordance with the specifications published by THE BARRETT COMPANY, metal lath, or metal clips being provided, as specified, as additional support for the finished tile walls.

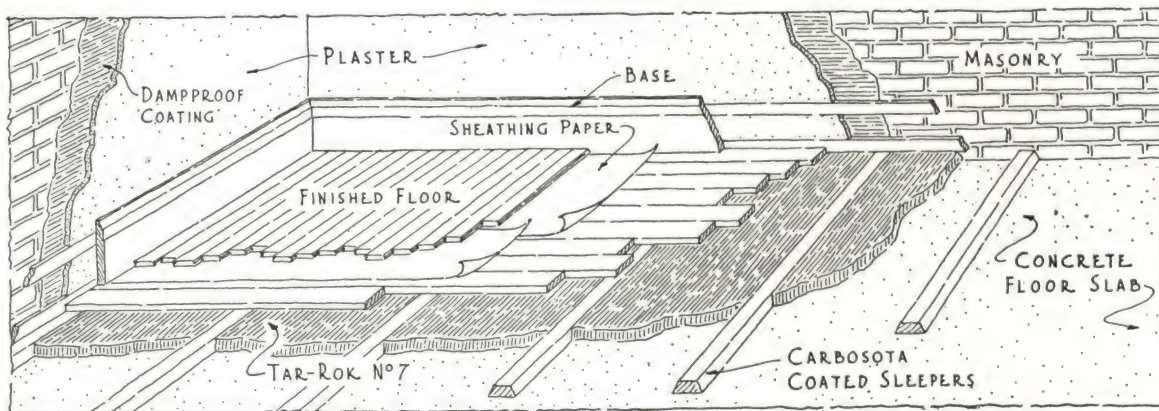


CLIP METHOD

Barrett

BARRETT DAMPPROOFING SYSTEM

DAMPPROOFING AND WOOD PRESERVATIVE METHOD FOR FLOORS



TAR-ROK & CARBOSOTA METHOD FOR WOOD FLOORS

SPECIFICATION

(For Tar-Rok Method)

Concrete Floor Base—The concrete floor base shall be dry and leveled off to the proper grade.

Wood Sleepers—All wood sleepers used in floor construction shall be given one preservative coating of Carbosota applied either by brush or by immersion, to permit thorough penetration into the wood. The wood sleepers shall then be fastened to the concrete floor base or slabs in the manner prescribed by the Architect.

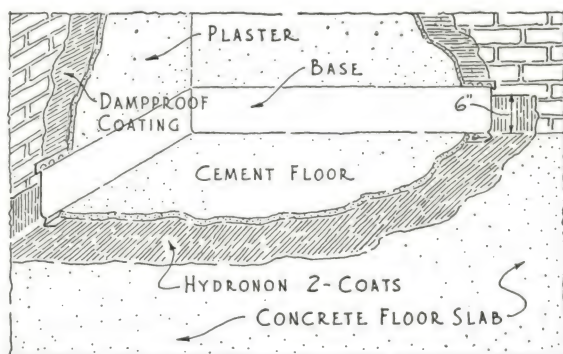
Dampproofing Course—A Tar-Rok dampproofing course shall be laid directly on the concrete floor base or slab to a thickness sufficient to bring it flush with the top edge of the sleepers after leveling with a straightedge.

The dampproofing course shall consist of fine dry sand, thor-

oughly mixed with Barrett Sub-Floor Tar No. 7 in the proportion of not less than twenty-five (25) nor more than thirty (30) gallons of Tar to each cubic yard of sand. The sand shall be thoroughly dried before mixing; and both sand and Sub-Floor Tar shall be heated sufficiently to permit their mixing freely. Neither the sand nor the Tar shall be more than two hundred and twenty-five (225) degrees Fahrenheit when mixed together. If a thick white smoke arises from the mixture indicating that it is overheated, five (5) gallons more of the Tar shall be added to each cubic yard of sand.

This mixture shall then be spread evenly to a thickness one-quarter ($\frac{1}{4}$) to one-half ($\frac{1}{2}$) inch higher than the top level of the wood sleepers so that it will compact to a dampproofing layer exactly flush with the tops of the sleepers.

The wood floor base or the finished cement floor shall then be laid directly on the dampproofing course and the flooring operation completed as prescribed by the Architect.



HYDRONON METHOD FOR CEMENT FLOORS

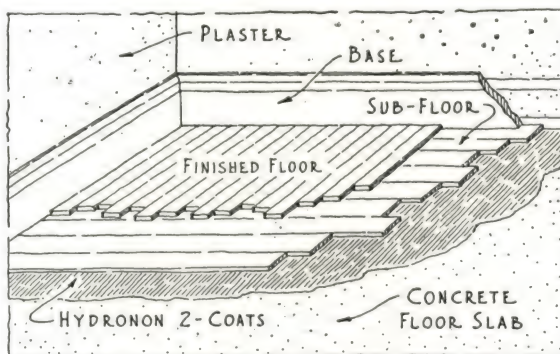
SPECIFICATION

(Hydronon Method for Cement and Wood Finished Flooring)

Concrete Floor Base—The concrete floor base shall be dry and leveled off to the proper grade.

Concrete shall be allowed to set for at least three (3) days before the dampproof coating is applied. Where high early strength cements are used for floors which are to be loaded within twenty-four (24) to forty-eight (48) hours, the dampproof coating may be applied after the concrete has set for at least twenty-four (24) hours.

Dampproofing—All floors shall be dampproofed by the application of two coats of Barrett Hydronon to the concrete floor



HYDRONON METHOD FOR WOOD FLOORS

base; and the finished cement floor or wood sub-floor laid therein.

The Hydronon shall be applied by brush in two thorough and even coats directly over the concrete floor base until the entire surface presents a uniform black appearance. The second coat shall be brushed at right angles to the first coat so as to insure thorough coverage of the entire surface with a continuous, impervious film without breaks. Both coats shall be carried up on the surrounding walls, columns, etc., for a distance of at least six (6) inches.

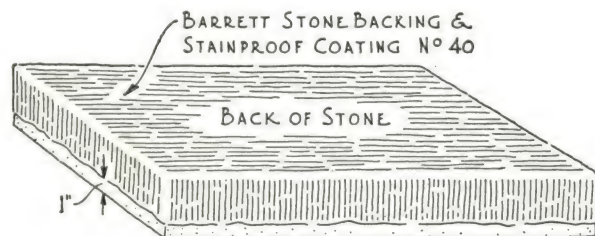
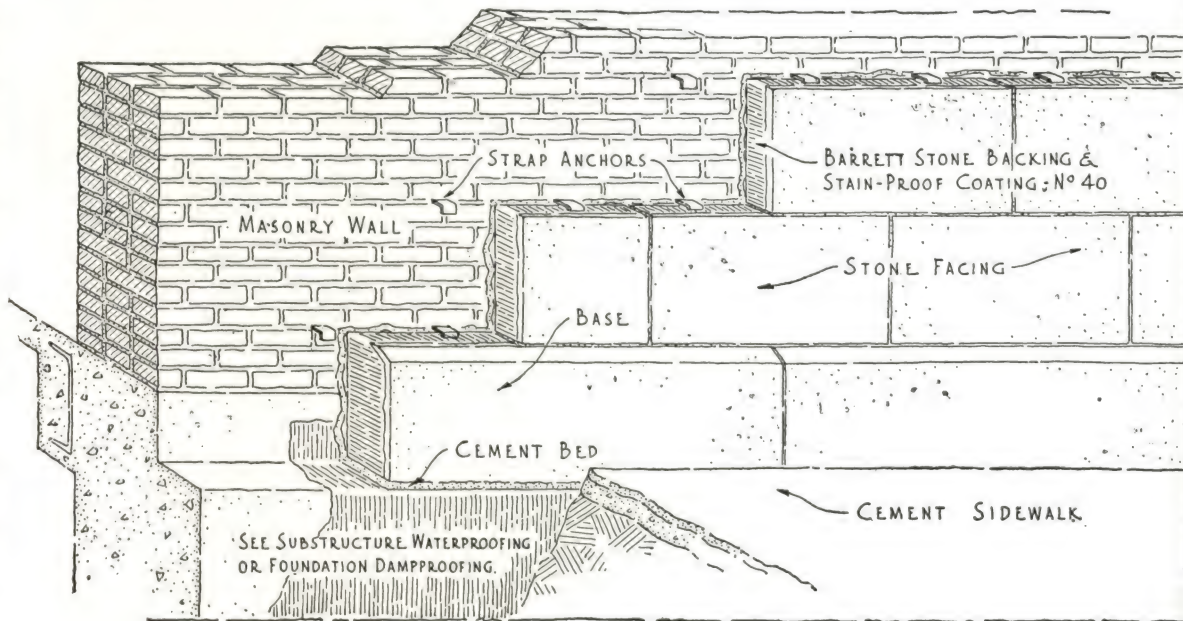
Twenty-four (24) hours shall elapse between the application of the first and second coats.

Within twelve (12) hours after the application of the final coat of Hydronon the finished cement floor or the wood sub-floor shall be laid as prescribed by the Architect.

Barrett



BARRETT DAMPPROOFING SYSTEM STONE BACKING AND STAINPROOF METHOD FOR EXTERIOR FACE STONE



SPECIFICATION

(1) All exterior face stone shall be given one thorough coat of Barrett Stone-Backing and Stainproof Coating No. 40, applied either by brush or compressed air spray, to the top, bedding, back and sides of each stone to within one (1) inch of its outer edge. All Lewis holes and anchor recesses shall be thoroughly coated before setting the stones in place.

(2) The surfaces of the stone to be stainproofed shall be dry, and free from any oil, grease, or other foreign matter that might interfere with the proper adhesion and penetration of the coating.

(3) Where the stones are treated at the quarry, each unit before being set in place on the job, shall be examined for breaks in the coating and touched-up where required.

(4) At least twelve (12) hours shall elapse between the application of the Stainproof Coating and the setting of the stone.

DETAIL OF COATED STONE BEFORE SETTING

Condensed Specification

All exterior face stone shall be given one thorough coat of Barrett Stone-Backing and Stainproof Coating No. 40, applied to the back and sides of each stone in strict accordance with the specifications published by THE BARRETT COMPANY.

Barrett Stone-Backing and Stainproof Coating is a dampproofing and protective coating whose use is defined in its name. It is applied to the back and four sides of stone and cast stone used for the facing of buildings, such as marble, limestone, Bedford stone, etc. It effectively prevents the staining and discoloration of the stone frequently caused by the chemical reaction set up by the lime present in cement mortar.

Barrett

BARRETT DAMPROOFING SYSTEM FOR FOUNDATION WALLS, RETAINING WALLS AND ABUTMENTS

SPECIFICATION

All surfaces to be dampproofed shall be dry and clean and free from dirt, dust or foreign materials. All voids, cracks or open joints in the masonry shall be properly pointed up with portland cement mortar before application of the dampproofing materials.

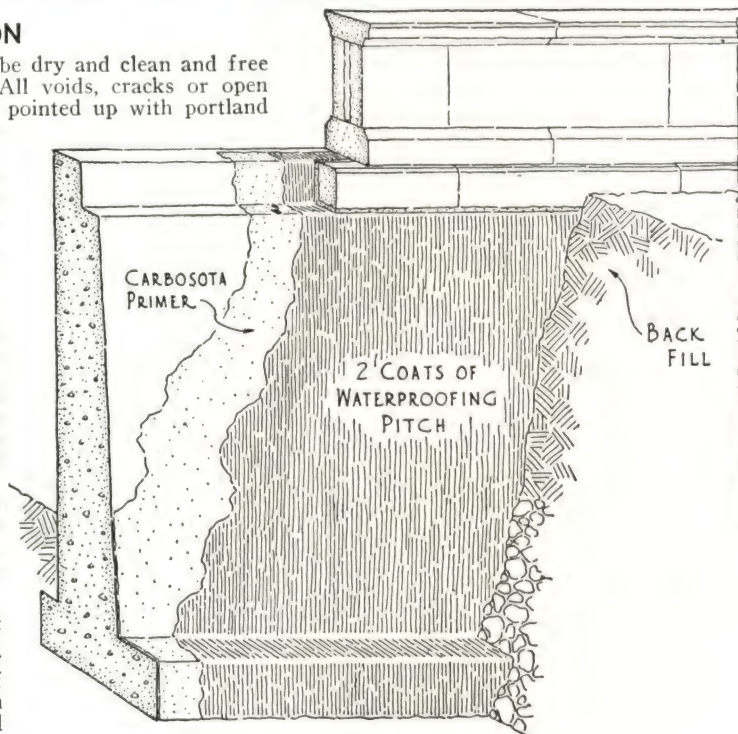
First—Apply over the entire surface to be dampproofed, a uniform prime coating of Barrett Carbosota, Grade 1, Creosote Oil.

Second—The priming coat of Carbosota shall be allowed to sufficiently penetrate the masonry, and before thoroughly dry, apply a uniform mop coating of Specification Waterproofing Pitch. The Pitch shall be applied in such manner as will obtain a heavy continuous coating of Waterproofing Pitch over the entire surface, filling all cracks, voids and crevices and upon completion shall present a dry, glossy appearance.

Third—After the entire surface has been completely covered with the first mopping, follow immediately with second heavy uniform mopping of Specification Waterproofing Pitch.

Fourth—Not less than one (1) gallon of Carbosota and eighty (80) pounds of Waterproofing Pitch shall be used for each one hundred (100) square feet of completed dampproofing and the Pitch shall not be heated above three hundred and fifty (350) degrees Fahrenheit.

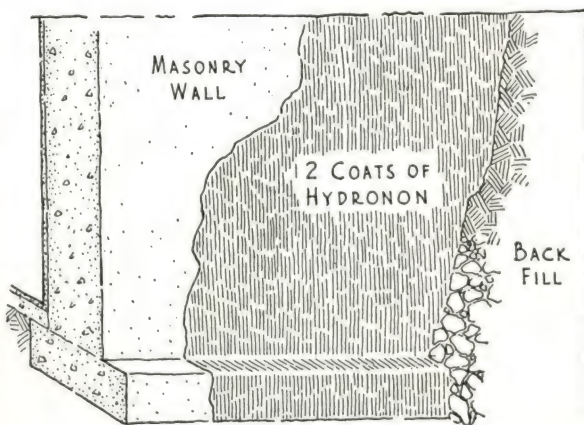
Fifth—Dampproofing shall be immediately covered with permanent back-fill, solidly tamped in place.



PITCH COATING METHOD

Condensed Specification

All exterior surfaces, and footings, of foundation walls, retaining walls and abutments shall be dampproofed by the application of one (1) priming coat of Carbosota and two (2) moppings of Waterproofing Pitch, both applied in strict accordance with the specifications published by THE BARRETT COMPANY.



HYDRONON METHOD

SPECIFICATION

The exterior surfaces and footings of foundation walls, retaining walls and abutments, shall be dampproofed by the application of two (2) coats of Barrett Hydronon applied either by brush or by spray.

All masonry surfaces to which Hydronon is to be applied shall be thoroughly dry and free of all dirt, grease, excess cement mortar or other foreign matter that might interfere with its adhesion and penetration. Any open areas in the concrete caused by segregation of coarse aggregates shall be filled in. Rubblestone construction shall be brought to an even surface with cement mortar. All holes and voids in masonry construction shall be carefully filled with portland cement mortar, and all joints struck flush.

The Hydronon shall be applied thoroughly and evenly from the footings to the soil or grade level so that all surfaces present a uniform black appearance. The second coat shall be brushed or sprayed at right-angles to the first coat so as to assure thorough coverage of the entire surface with a continuous impervious film without holidays, pinholes or spots.

Twenty-four (24) hours shall elapse between the first and second coats. Back-filling of the soil, where required, shall be commenced not more than seven (7) days nor less than one (1) day after the final application of Hydronon.

Condensed Specification

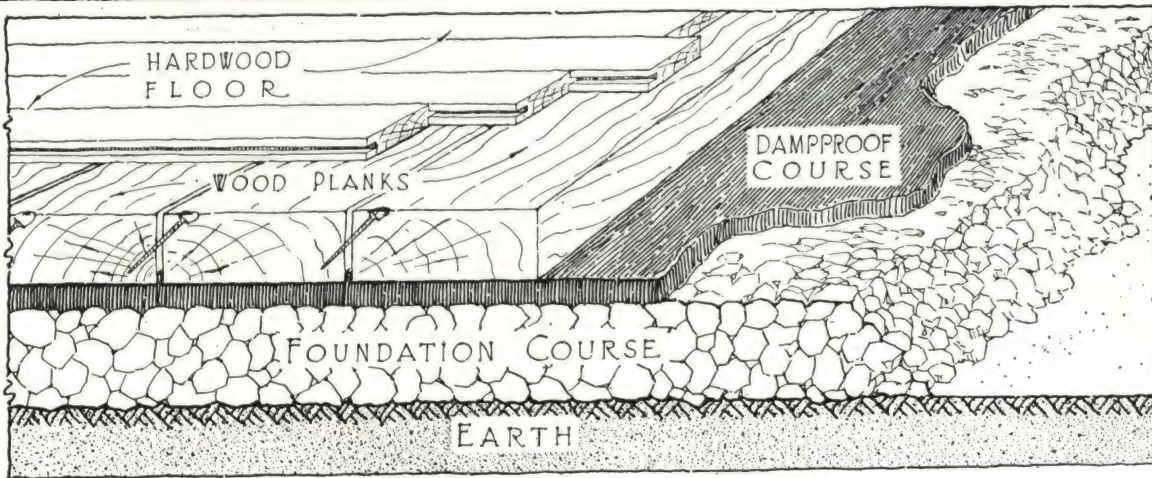
All exterior surfaces and footings of foundation walls, retaining walls and abutments shall be dampproofed by the application of two coats of Barrett Hydronon, applied in strict accordance with the specifications published by THE BARRETT COMPANY.

Barrett

BARRETT DAMPPROOFING SYSTEM

TAR-ROK METHOD

OVER CONCRETE BASE SLAB OR EARTH



APPLICATION OVER EARTH

SPECIFICATION

Grading—The general contractor for the building shall level off the earth to proper grade to receive the Tar-Rok, and if any filling is necessary it shall be properly puddled and rammed.

Foundation Course—The foundation course shall consist of four (4) inches thickness of screened gravel or crushed stone, not any of which shall exceed two and one-half ($2\frac{1}{2}$) inches in longest dimension or be less than one-quarter ($\frac{1}{4}$) inch in size, mixed with sufficient Barrett Sub-Floor Tar No. 5 (as specified) so that it will compact under a roller after being spread evenly in place. It shall then be rolled until the stones do not creep under the roller. The Tar for this course may be heated to not more than two hundred (200) degrees F., and in cold weather the stone shall be slightly warmed if necessary, so that the Tar will mix with the stone and the stone spread evenly. The roller used for this work shall weigh not less than three hundred (300) pounds to each foot in length. Sub-Floor Tar used in foundation course shall be approximately (See Note 1):

Six (6) gallons for each cubic yard of two and one-half ($2\frac{1}{2}$) inches to one (1) inch crushed stone;

Nine (9) gallons for each cubic yard of two and one-half ($2\frac{1}{2}$) inches to one-quarter ($\frac{1}{4}$) inch crushed stone;
Seven (7) gallons for each cubic yard of coarse-screened gravel;

Ten (10) gallons for each cubic yard of fine-screened gravel.
Note 1—Only sufficient Tar should be used so that the stone or gravel will properly compact and provide a suitable surface for spreading the dampproof course.

Dampproof Course—The dampproof course shall consist of a fine sand and thoroughly mixed with Barrett Sub-Floor Tar No. 7 in the proportion of not less than twenty-five (25) nor more than thirty (30) gallons of Tar to each cubic yard of sand. The sand shall be thoroughly dry before mixing, and both sand and Tar shall be heated sufficiently to make them mix freely, but neither sand nor Tar shall be hotter than two hundred twenty-five (225) degrees F., when being mixed together. If a thick, white smoke arises from the mixture, indicating it is overheated, five (5) gallons more Tar to each yard of sand shall be required. This mixture shall be spread evenly one and one-quarter ($1\frac{1}{4}$) to one and one-half ($1\frac{1}{2}$) inches thick (so it will compact to one (1) inch) over the foundation, leveled with straight-edge, and followed closely with plank.

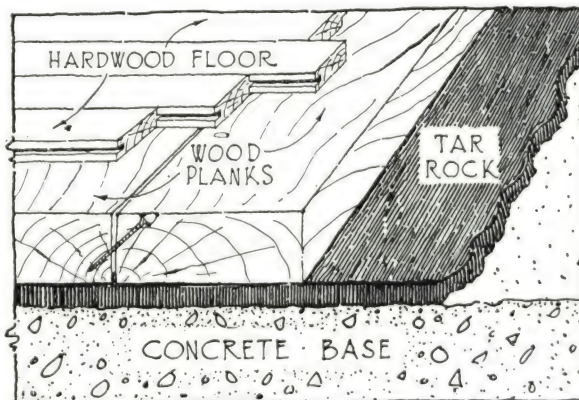
The plank shall be laid on this soft mixture, and bedded on it by hammering until the proper stability is obtained and the plank brought to a proper level and toe-nailed. If after hammering any plank is below the proper level, the plank shall be taken up and more of the mixture spread on. (The plank and finished flooring shall be furnished and laid by other contractors.)

SPECIFICATION

The general contractor for the building shall level off the concrete to proper grade to receive the Tar-Rok Dampproof course.

Dampproof Course—The dampproof course shall consist of a fine sand thoroughly mixed with Barrett Sub-Floor Tar No. 7 in the proportion of not less than twenty-five (25) nor more than thirty (30) gallons of Tar to each cubic yard of sand. The sand shall be thoroughly dry before mixing, and both sand and Tar shall be heated sufficiently to make them mix freely, but neither sand nor Tar shall be hotter than two hundred twenty-five (225) degrees Fahrenheit when being mixed together. If a thick, white smoke arises from the mixture, indicating it is overheated, five (5) gallons more Tar to each yard of sand shall be required. This mixture shall be spread evenly one and one-quarter ($1\frac{1}{4}$) inches to one and one-half ($1\frac{1}{2}$) inches thick (so it will compact to one (1) inch) over the foundation, leveled with a straight-edge, and followed closely with dry, well seasoned plank.

The plank shall be laid on this soft mixture, and bedded on it by hammering until the proper stability is obtained and the plank brought to a proper level and toe-nailed. If after hammering, any plank is below the proper level, the plank shall be taken up and more of the mixture spread on. (The plank and finished flooring shall be furnished and laid by other contractors.)



APPLICATION OVER CONCRETE

Barrett

THE Barrett Company manufactures, in addition to the Built-Up Roofing and Waterproofing Materials mentioned in this manual, an extensive line of prepared roofing products, such as mineral-surfaced asphalt shingles, roll roofings, sheathings, building papers, roof preservatives and repair materials, protective paints, wood preservatives, etc., constituting a comprehensive service for the building industry. Particulars concerning any materials in these classifications will be furnished upon request.

The *Barrett* Company

40 RECTOR STREET
NEW YORK



BIRD

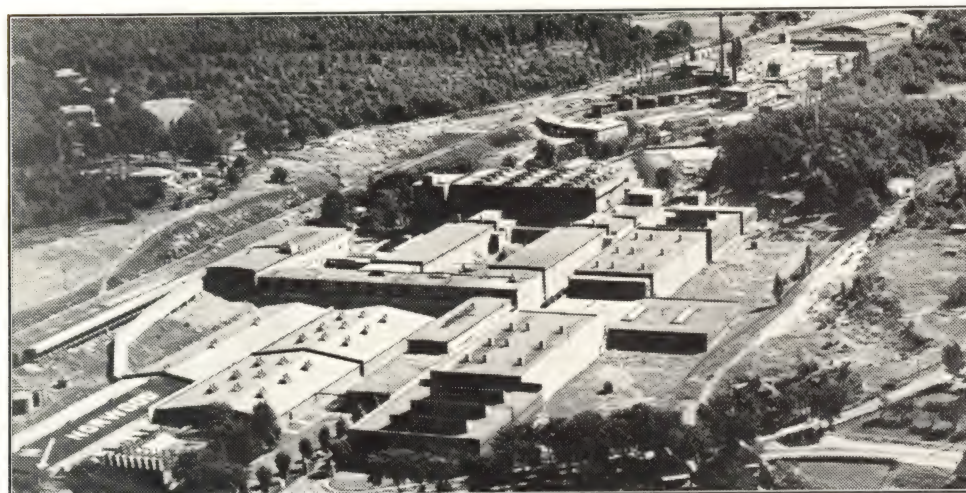
BUILT-UP ROOFING





The organization making **BIRD BUILDING PRODUCTS**

Established 1795 . . . when Washington was President



FOUNDED in 1795, the continuous success of Bird & Son, inc., has proved the sound principles upon which Bird makes and distributes its products. A long time in business means much when demonstrated stability is coupled with a quality line of materials.

This high quality of products has been secured and maintained by constant research by the Bird laboratories and the rigid control of production exercised in the mills. This unceasing research and experimentation has resulted in the introduction of many outstanding products such as Thick Butt Shingles, Shatter Resistant Coating, Quick Setting Lap Cement, and numerous other improvements.

While this book is devoted to Bird Built-up Roofs, it is of interest to know that Bird manufactures and distributes Asphalt Mineral Surfaced Shingles and Sidings, Roll Roofings, Insulating Materials and Wallboards, Neponset Felt Base Rugs and Floor Coverings, Shipping Cases and Cartons, Flower Pots and Special Papers.

For Index to Specifications, see page 27.

BIRD & SON, inc.
EAST WALPOLE, Mass.

NEW YORK OFFICE
295 FIFTH AVENUE
NEW YORK, N. Y.

CHICAGO OFFICE
and PLANT
1472 WEST 76th STREET
CHICAGO, ILLINOIS

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Bird & Son, inc.

ROOFING MANUAL

ON BIRD BUILT-UP ROOFINGS AND FLASHINGS

Complete Specifications for BIRD BUILT-UP Bonded Roofs for all types of service . . .

BIRD BUILT-UP ROOFINGS *for all purposes*

There is a Bird Built-Up Roof for every type of flat roof construction. In the data and specifications given on the following pages you will find the answer to positive roof protection. The mineral surfacing protecting the waterproofing elements is one of the many specific features of Bird Built-Up Roofs that provide longer life.

ASPHALT *and* TAR ROOF TYPES

Bird Built-Up Roofing Specifications are designed to use either Bird Roofing Pitch or Bird Roofing Asphalt as desired by the Architect to meet particular conditions or preferences. Either pitch or asphalt may be used as the waterproofing element for flat roofs. For steep roofs, or those having a slope of over two inches to the foot, asphalt should be used on account of its high melting point and stability. Special high melting type asphalts are produced by Bird to be used on steep roofs. These are of the very highest quality and assure long life for the roof.

BONDED ROOFS

The satisfaction that any roof will give depends upon two important factors: First, the materials must be suitable for the service to be rendered. Second, and equally important, these materials must be correctly applied. When both these conditions are met, satisfactory results are assured. Because Bird & Son, inc., has carefully covered these conditions, they are prepared to offer bonded roofs for ten, fifteen or twenty years' service.

BIRD BONDED ROOFS

Installed only by accredited Roofers

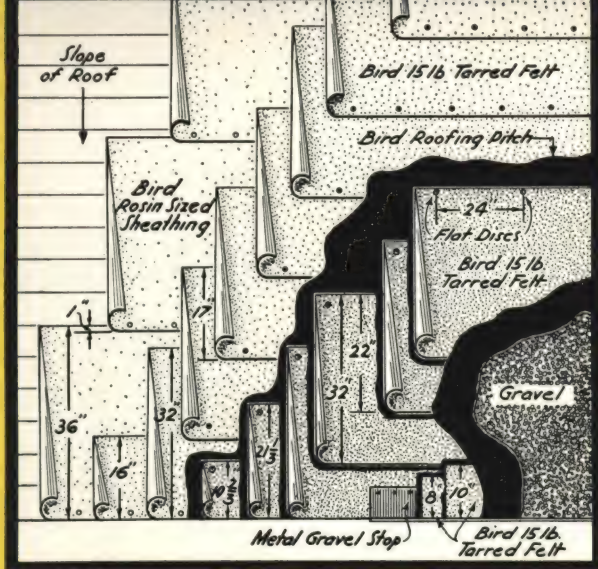
A properly applied roof is one in which all of the elements entering into its make-up are bonded together into one solid mass. This perfect application results only through experienced workmanship. Such workmanship is made possible on Bird Bonded Roofs because of the careful selection of only accredited roofers of unquestioned dependability applying Bird Roofs.



BIRD

Built-up

ROOFINGS



BIRD 20 YEAR BUILT-UP ROOF, PITCH AND GRAVEL OR SLAG Over Wood or Precast Gypsum Decks Slope 0" to 2" in 1'-0"

SPECIFICATION NO. 601—TYPE 515-TW

BILL OF MATERIALS PER 100 SQUARE FEET

Rosin Sized Paper—1 layer Bird Rosin Sized Paper	6 lbs.
Tarred Felt—5 layers Bird 15 lb. Tarred Felt	78 lbs.
Pitch—Bird Roofing Pitch	150 lbs.
Nails and Discs—1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs	
Surfacing—Gravel	400 lbs.
Slag	300 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (State in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Rosin Sized Sheathing Paper—Shall be Bird Rosin Sized Sheathing Paper, thirty-six (36) ins. wide, weighing not less than six (6) lbs. per one hundred (100) sq. ft.

Felt—Shall be Bird 15 lb. Tarred Felt thirty-two (32) ins. wide weighing approximately 15 lbs. per one hundred (100) sq. ft.

Pitch—Shall be Bird Roofing Pitch and shall not be heated above three hundred seventy-five (375) degrees Fahrenheit.

Gravel or Slag—Shall be dry and free from dirt and range from one-quarter (¼) to five-eighths (⅝) in. in size.

Nails—For wood or wooden nailing strips, shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be covered with one (1) layer of Sheathing Paper, lapping sheets not less than one (1) in.
- Two (2) plies of Bird 15 lb. Tarred Felt shall be laid dry over the Sheathing Paper, lapped seventeen (17) ins. and nailed often enough to hold sheets in place.
- Three (3) additional plies of Bird 15 lb. Tarred Felt shall be laid over entire surface, lapped twenty-two (22) ins. and each sheet embedded its full width in Bird Roofing Pitch. Each sheet shall be nailed along upper edge with barbed nails driven through flat tinned discs spaced not more than two (2) ft. on centers.
- A uniform coating of Bird Roofing Pitch shall be poured over the entire surface, using not less than sixty (60) lbs. per 100 sq. ft., into which, while hot, shall be embedded not less than four hundred (400) lbs. of gravel or three hundred (300) lbs. of slag per 100 sq. ft.

All Felts shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Twenty-Year Guarantee Bond to cover the roofing applied under this contract.

BIRD 20-YEAR BUILT-UP ROOF, ASPHALT AND GRAVEL (SLAG) Over Wood or Precast Gypsum Decks, Slope ¼" to 3" in 1'-0"

Bird Specification No. 101—Type 515-AW

The construction for this roof is identical with Specification No. 601, with changes under "Installation" as follows:

- Omit item No. 1 entirely.
- Two (2) plies of Bird 15 lb. Asphalt Felt 36 ins. wide shall be laid dry over entire roof deck, lapped nineteen (19) ins. and nailed in two (2) staggered parallel rows, three-quarters (¾)

in. and eight and one-half (8½) ins. above the lower edge, and spaced nine (9) ins. center to center.

- Three (3) additional plies of Bird 15 lb. Asphalt Felt 36 ins. wide shall be laid over entire surface, lapped twenty-five (25) ins. and each sheet embedded its full width in Bird Roofing Asphalt No. 16.
- Substitute Bird Roofing Asphalt No. 16 for Bird Roofing Pitch.
(Balance of specification remains the same.)

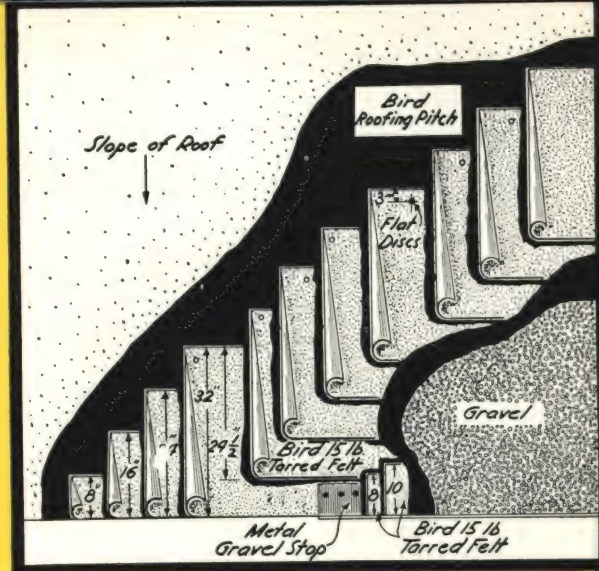
BIRD 20 YEAR BUILT-UP ROOF, PITCH AND GRAVEL OR SLAG

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 0" to 2" in 1'-0"

SPECIFICATION NO. 602—TYPE 415-TC

BILL OF MATERIALS PER 100 SQUARE FEET

Tarred Felt—4 layers Bird 15 lb. Tarred Felt	62 lbs.
Pitch—Bird Roofing Pitch	180 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—Gravel	400 lbs.
Slag	300 lbs.



Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including eaves, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

BIRD 20-YEAR BUILT-UP ROOF, ASPHALT AND GRAVEL (SLAG)

Over Concrete Decks, Slope ¼" to 2" in 1'-0"

Where slope is over 2", nailing strip shall be provided for in the roof deck

When Used Over Bird Insulated Decks, No Primer Is Required

Bird Specification No. 102—Type 415-AC

The construction for this roof is identical with Specification No. 602, with the following changes under "Installation":

- Entire roof surface shall first be primed with Bird Asphalt Primer.
- Four (4) plies of Bird 15 lb. Asphalt Felt 36 ins. wide shall be laid over entire roof surface, each sheet lapped twenty-seven

Felt—Shall be Bird 15 lb. Tarred Felt thirty-two (32) ins. wide weighing approximately 15 lbs. per one hundred (100) sq. ft.

Pitch—Shall be Bird Roofing Pitch and shall not be heated above three hundred seventy-five (375) degrees Fahrenheit.

Gravel or Slag—Shall be dry and free from dirt and range from (one-quarter) ¼ to five-eighths (⅝) in. in size.

Nails—For wood or wooden nailing strips, shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be coated with Bird Roofing Pitch.
- Four (4) plies of Bird 15 lb. Tarred Felt shall be laid over entire roof surface, each sheet lapped twenty-four and one-half (24½) ins. and embedded in Bird Roofing Pitch. Each sheet shall be nailed along upper edge with barbed nails driven through flat tinned discs spaced not more than two (2) ft. on centers.
- A uniform coating of Bird Roofing Pitch shall be poured over the entire surface, using not less than sixty (60) lbs. per 100 sq. ft., into which, while hot, shall be embedded not less than four hundred (400) lbs. of gravel or three hundred (300) lbs. of slag per 100 sq. ft.

All Felts shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces.

Flashing

(Copy from Bird Flashing Specifications.)

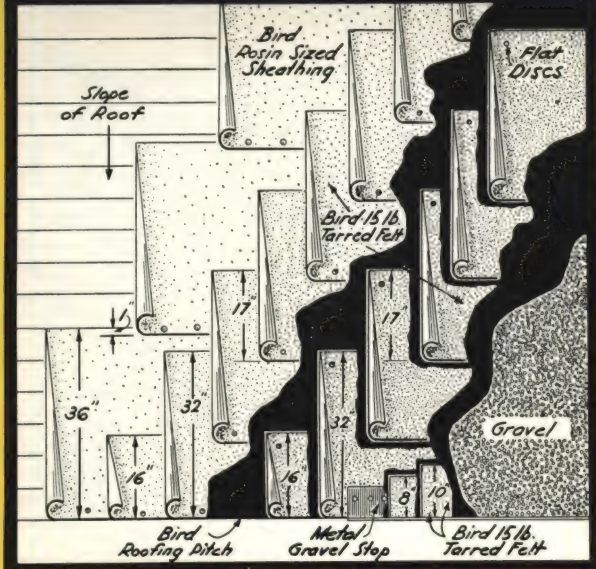
Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Twenty-Year Guarantee Bond to cover the roofing applied under this contract.

and one-half (27½) ins. and embedded in Bird Roofing Asphalt. Each sheet shall be nailed three (3) ins. from upper edge with barbed nails driven through flat tinned discs spaced not more than twelve (12) ins. on centers.

- Substitute Bird Roofing Asphalt No. 16 for Bird Roofing Pitch.
(Balance of specification remains the same.)



BIRD 15 YEAR BUILT-UP ROOF, PITCH AND GRAVEL OR SLAG Over Wood or Precast Gypsum Decks Slope 0" to 2" in 1'-0"

SPECIFICATION NO. 603—TYPE 415-TW

BILL OF MATERIALS PER 100 SQUARE FEET

Rosin Sized Paper—Bird Rosin Sized Paper	6 lbs.
Tarred Felt—4 layers Bird 15 lb. Tarred Felt	62 lbs.
Pitch—Bird Roofing Pitch	120 lbs.
Nails and Discs—1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs.	
Surfacing—Gravel	400 lbs.
Slag	300 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Rosin Sized Sheathing Paper—Shall be Bird Rosin Sized Sheathing Paper, thirty-six (36) ins. wide, weighing not less than six (6) lbs. per one hundred (100) sq. ft.

Felt—Shall be Bird 15 lb. Tarred Felt thirty-two (32) ins. wide weighing approximately 15 lbs. per one hundred (100) sq. ft.

Pitch—Shall be Bird Roofing Pitch and shall not be heated above three hundred seventy-five (375) degrees Fahrenheit.

Gravel or Slag—Shall be dry and free from dirt and range from one-quarter (¼) to five-eighths (⅝) in. in size.

Nails—For wood or wooden nailing strips, shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be covered with one (1) layer of Sheathing Paper, lapping sheets not less than one (1) in.
- Two (2) plies of Bird 15 lb. Tarred Felt shall be laid dry over the Sheathing Paper, lapped seventeen (17) ins. and nailed often enough to hold sheets in place.
- Two (2) additional plies of Bird 15 lb. Tarred Felt shall be laid over entire surface, lapped seventeen (17) ins. and each sheet embedded its full width in Bird Roofing Pitch. Each sheet shall be nailed along upper edge with barbed nails driven through flat tinned discs spaced not more than two (2) ft. on centers.
- A uniform coating of Bird Roofing Pitch shall be poured over the entire surface, using not less than sixty (60) lbs. per 100 sq. ft., into which, while hot, shall be embedded not less than four hundred (400) lbs. of gravel or three hundred (300) lbs. of slag per 100 sq. ft.

Felts shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Fifteen-Year Guarantee Bond to cover the roofing applied under this contract.

BIRD 15-YEAR BUILT-UP ROOF, ASPHALT AND GRAVEL (SLAG) Over Wood or Precast Gypsum Decks, Slope ¼" to 3" in 1'-0"

Bird Specification No. 103—Type 415-AW

The construction for this roof is identical with Specification No. 603, with changes under "Installation" as follows:

- Omit item No. 1 entirely.
- Two (2) plies of Bird 15 lb. Asphalt Felt 36 ins. wide shall be laid dry over entire roof deck, lapped nineteen (19) ins. and nailed in two (2) staggered parallel rows, three-quarters (¾) in. and eight and one-half (8½) ins. above the lower edge, and

- Two (2) additional plies of Bird 15 lb. Asphalt Felt 36 ins. wide shall be laid over entire surface, lapped nineteen (19) ins. and each sheet embedded its full width in Bird Roofing Asphalt No. 16.
- Substitute Bird Roofing Asphalt No. 16 for Bird Roofing Pitch. (Balance of specification remains the same.)

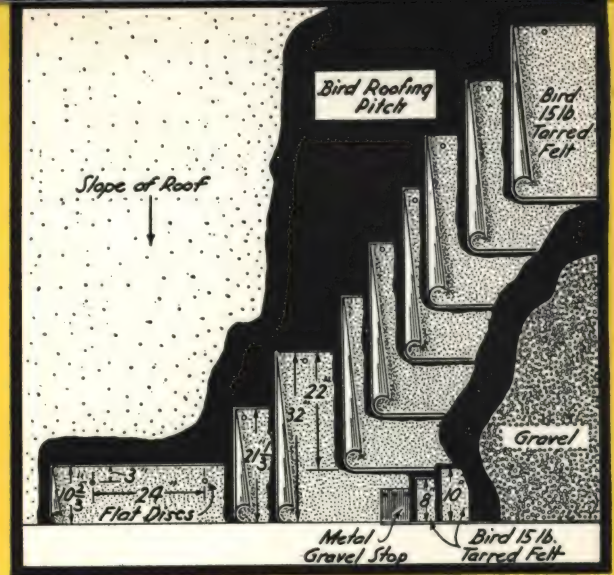
BIRD 15 YEAR BUILT-UP ROOF, PITCH AND GRAVEL OR SLAG

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 0" to 2" in 1'-0"

SPECIFICATION No. 604—TYPE 315-TC

BILL OF MATERIALS PER 100 SQUARE FEET

Tarred Felt—3 layers Bird 15 lb. Tarred Felt	46 lbs.
Pitch—Bird Roofing Pitch	150 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—Gravel	400 lbs.
Slag	300 lbs.



Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is not a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

BIRD 15-YEAR BUILT-UP ROOF, ASPHALT AND GRAVEL (SLAG) Over Concrete Decks, Slope ¼" to 2" in 1'-0"

Where slope is over 2", nailing strip shall be provided for in the roof deck
(When Used Over Bird Insulated Decks, No Primer Is Required)

Bird Specification No. 104—Type 315-AC

The construction for this roof is identical with Specification No. 604, with the following changes under "Installation":

- Entire roof surface shall first be primed with Bird Asphalt Primer:
- Three (3) plies of Bird 15 lb. Asphalt Felt 36 ins. wide shall be laid over entire roof surface, each sheet lapped twenty-five

Felt—Shall be Bird 15 lb. Tarred Felt thirty-two (32) ins. wide weighing approximately 15 lbs. per one hundred (100) sq. ft.

Pitch—Shall be Bird Roofing Pitch and shall not be heated above three hundred seventy-five (375) degrees Fahrenheit.

Gravel or Slag—Shall be dry and free from dirt and range from one-quarter (¼) to five-eighths (⅝) in. in size.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be coated with Bird Roofing Pitch.
- Three (3) plies of Bird 15 lb. Tarred Felt shall be laid over entire roof surface, each sheet lapped twenty-two (22) ins. and embedded in Bird Roofing Pitch. Each sheet shall be nailed along upper edge with barbed nails driven through flat tinned discs not more than two (2) ft. on centers.
- A uniform coating of Bird Roofing Pitch shall be poured over the entire surface, using not less than sixty (60) lbs. per 100 sq. ft. into which, while hot, shall be embedded not less than four hundred (400) lbs. of gravel or three hundred (300) lbs. of slag per 100 sq. ft.

All Felts shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces.

Flashing

(Copy from Bird Flashing Specifications.)

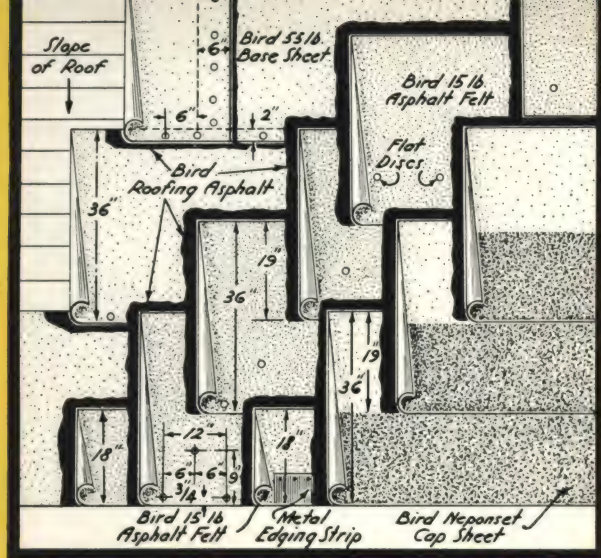
Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Fifteen-Year Guarantee Bond to cover the roofing applied under this contract.

- (25) ins. and embedded in Bird Roofing Asphalt. Each sheet shall be nailed three (3) ins. from upper edge with barbed nails driven through flat tinned discs spaced not more than twelve (12) ins. on centers.
- Substitute Bird Roofing Asphalt No. 16 for Bird Roofing Pitch.

(Balance of specification remains the same.)



BIRD 20 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Wood or Precast Gypsum Decks
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 201—TYPE B215-A-NW

BILL OF MATERIALS PER 100 SQUARE FEET

Base Sheet—1 layer Bird 55 lb. Base Sheet	55 lbs.
Asphalt Felt—2 layers Bird 15 lb. Asphalt Felt	31 lbs.
Asphalt—Bird Roofing Asphalt	120 lbs.
Nails and Discs—1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs.	
Surfacing—2 layers Bird Neponset Cap Sheet	88 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Base Sheet—Shall be Bird 55 lb. Base Sheet for Built-up Roofs, thirty-six (36) ins. wide weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be covered with one (1) layer of Bird 55 lb. Base Sheets lapped two (2) ins. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18 and nailed on six (6) in. centers.
- Two (2) plies of Bird 15 lb. Asphalt Felt shall be laid over the Base Sheet, lapped nineteen (19) ins., and each sheet embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and nine (9) ins. from lower edge of sheet, spacing nails twelve (12) ins. center to center.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Felts, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts, Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Twenty-Year Guarantee Bond to cover the roofing applied under this contract.

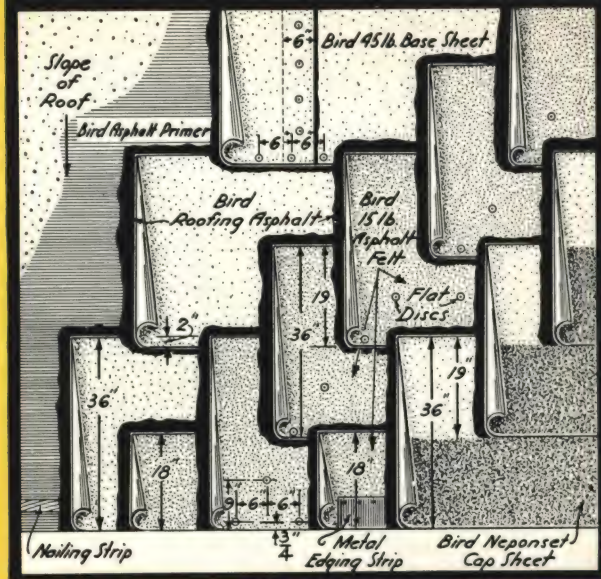
BIRD 20 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 202—TYPE B215-A-NC

BILL OF MATERIALS PER 100 SQUARE FEET

Primer—Bird Asphalt Primer	10 lbs.
Base Sheet—1 layer Bird 45 lb. Base Sheet	45 lbs.
Asphalt Felt—2 layers Bird 15 lb. Asphalt Felt	31 lbs.
Asphalt—Bird Roofing Asphalt	150 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—2 layers Bird Neponset Cap Sheet	88 lbs.



When Used Over Bird Insulated Decks, No Primer Is Required

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Primer—Shall be Bird Asphalt Primer.

Base Sheet—Shall be Bird 45 lb. Base Sheet for Built-up Roofs, thirty-six (36) ins. wide weighing approximately forty-five (45) lbs. per one hundred (100) sq. ft.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wooden nailing strips, shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface to be roofed and flashed shall be coated with Bird Asphalt Primer and allowed to dry.
- Entire roof surface shall be covered with one (1) layer of Bird 45 lb. Base Sheet embedded full width in Bird Roofing Asphalt No. 18, and lapped two (2) ins. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18 and nailed on six (6) in. centers.
- Two (2) plies of Bird 15 lb. Asphalt Felt shall be laid over the Base Sheet, lapped nineteen (19) ins. and each sheet embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and nine (9) ins. from lower edge of sheet, spacing nails twelve (12) ins. center to center.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Felts, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts, Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

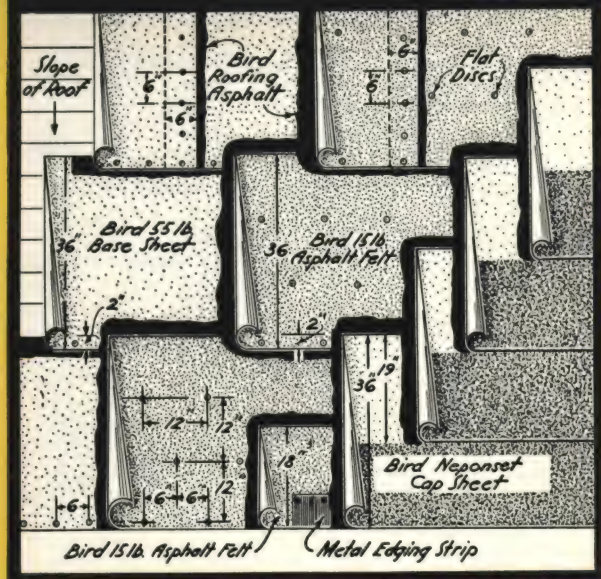
Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Twenty-Year Guarantee Bond to cover the roofing applied under this contract.



BIRD 15 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Wood or Precast Gypsum Decks
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 203—TYPE B15-A-NW

BILL OF MATERIALS PER 100 SQUARE FEET

Base Sheet—1 layer Bird 55 lb. Base Sheet.....	55 lbs.
Asphalt Felt—1 layer Bird 15 lb. Asphalt Felt.....	15 lbs.
Asphalt—Bird Roofing Asphalt	90 lbs.
Nails and Discs—1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs.	
Surfacing—2 layers Bird Neponset Cap Sheet.....	88 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Base Sheet—Shall be Bird 55 lb. Base Sheet for Built-up Roofs, thirty-six (36) ins. wide weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips, shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails.) For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be covered with one (1) layer of Bird 55 lb. Base Sheets lapped two (2) ins. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18 and nailed on six (6) in. centers.
- One (1) ply of Bird 15 lb. Asphalt Felt shall be laid over the Base Sheet, lapped two (2) ins. at edges and six (6) ins. at ends, and each sheet embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed at the lap and in two (2) staggered parallel rows twelve (12) and twenty-four (24) ins. from lower edge of sheet, spacing nails twelve (12) ins. center to center.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Felt, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts, Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Fifteen-Year Guarantee Bond to cover the roofing applied under their contract.

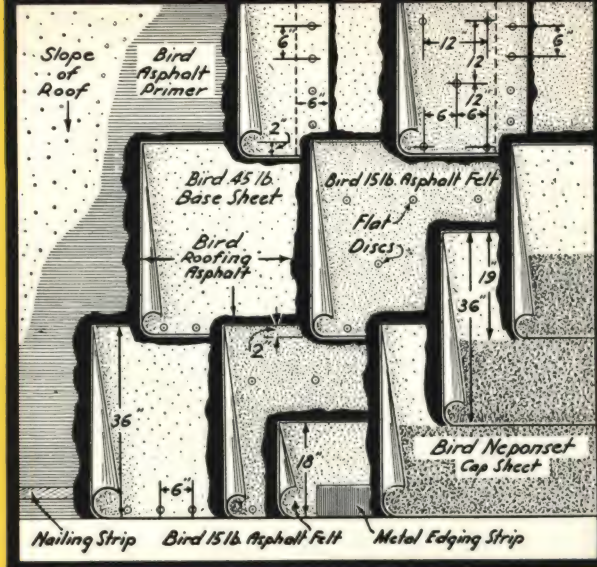
BIRD 15 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 204—TYPE B15-A-NC

BILL OF MATERIALS PER 100 SQUARE FEET

Primer—Bird Asphalt Primer	10 lbs.
Base Sheet—1 layer Bird 45 lb. Base Sheet	45 lbs.
Asphalt Felt—1 layer Bird 15 lb. Asphalt Felt	15 lbs.
Asphalt—Bird Roofing Asphalt	120 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—2 layers Bird Neponset Cap Sheet	88 lbs.



When Used Over Bird Insulated Decks, No Primer Is Required

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Primer—Shall be Bird Asphalt Primer.

Base Sheet—Shall be Bird 45 lb. Base Sheet for Built-up Roofs, thirty-six (36) ins. wide weighing approximately forty-five (45) lbs. per one hundred (100) sq. ft.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide

weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips, shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface to be roofed and flashed shall be coated with Bird Asphalt Primer and allowed to dry.
- Entire roof surface shall be covered with one (1) layer of Bird 45 lb. Base Sheet embedded full width in Bird Roofing Asphalt No. 18, and lapped two (2) ins. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18 and nailed on six (6) in. centers.
- One (1) ply of Bird 15 lb. Asphalt Felt shall be laid over the Base Sheet, lapped two (2) ins. at edges and six (6) ins. at ends, and each sheet embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed at the lap, and in two (2) staggered parallel rows twelve (12) ins. and twenty-four (24) ins. from lower edge of sheet, spacing nails twelve (12) ins. center to center.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Felt, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts, Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

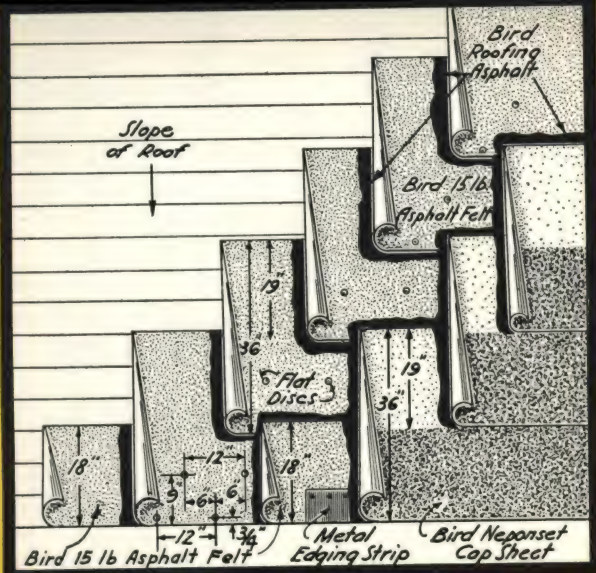
Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Fifteen-Year Guarantee Bond to cover the roofing applied under this contract.



BIRD 10 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Wood or Precast Gypsum Decks
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 205—TYPE 215-A-NW

BILL OF MATERIALS PER 100 SQUARE FEET

Asphalt Felt—2 layers Bird 15 lb. Asphalt Felt.....	31 lbs.
Asphalt—Bird Roofing Asphalt	90 lbs.
Nails and Discs—1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs.	
Surfacing—2 layers Bird Neponset Cap Sheet.....	88 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be covered with two (2) plies of Bird 15 lb. Asphalt Felt. lapped nineteen (19) ins., and the nineteen (19) in. lap embedded in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and nine (9) ins. from lower edge of the sheet, spacing the nails twelve (12) ins. center to center.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Felt, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts, Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.

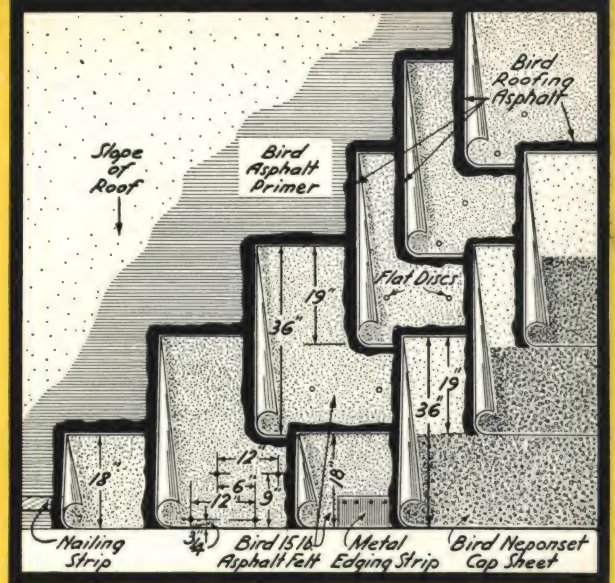
BIRD 10 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 206—TYPE 215-A-NC

BILL OF MATERIALS PER 100 SQUARE FEET

Primer—Bird Asphalt Primer	10 lbs.
Asphalt Felt—2 layers Bird 15 lb. Asphalt Felt	31 lbs.
Asphalt—Bird Roofing Asphalt	120 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—2 layers Bird Neponset Cap Sheet	88 lbs.



When Used Over Bird Insulated Decks, No Primer Is Required

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Primer—Shall be bird Asphalt Primer.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide

weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface to be roofed and flashed shall be coated with Bird Asphalt Primer and allowed to dry.
- Entire roof deck shall be covered with two (2) plies of Bird 15 lb. Asphalt Felt, lapped nineteen (19) ins., and each sheet embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and nine (9) ins. from lower edge of the sheet, spacing the nails twelve (12) ins. center to center.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Felt, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts, Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

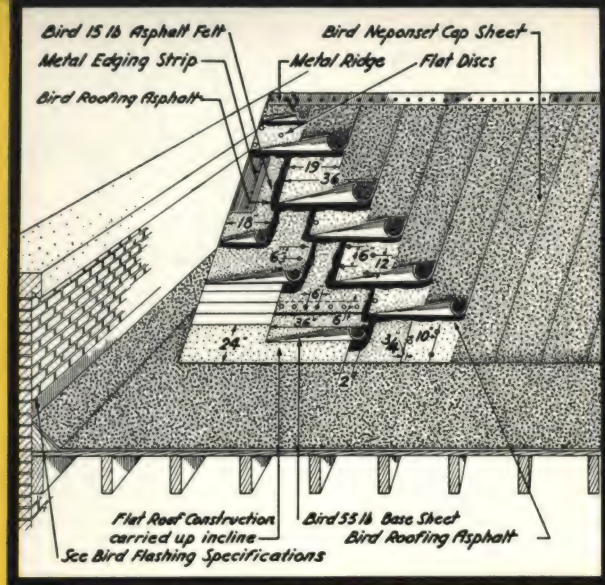
Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.



BIRD 10 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Wood or Precast Gypsum Decks
Slope 4" up in 1'-0"

SPECIFICATION NO. 207—TYPE B-NW

BILL OF MATERIALS PER 100 SQUARE FEET

Base Sheet —1 layer Bird 55 lb. Base Sheet.....	55 lbs.
Asphalt —Bird Roofing Asphalt	60 lbs.
Nails and Discs —1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs.	
Surfacing —2 layers Bird Neponset Cap Sheet.....	88 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction**—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction**—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction**—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Base Sheet—Shall be Bird 55 lb. Base Sheet for Built-up Roofs,

thirty-six (36) ins. wide weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface shall be covered with one (1) layer of Bird 55 lb. Base Sheet lapped two (2) ins. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18 and nailed on six (6) in. centers.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Base Sheet, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. The felt, or selvage portion of the Cap Sheet, shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and ten (10) ins. from edge, spacing nails twelve (12) ins. center to center.

Note: On inclines under three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid perpendicular to the pitch. On inclines over three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid parallel with the pitch.

All Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.

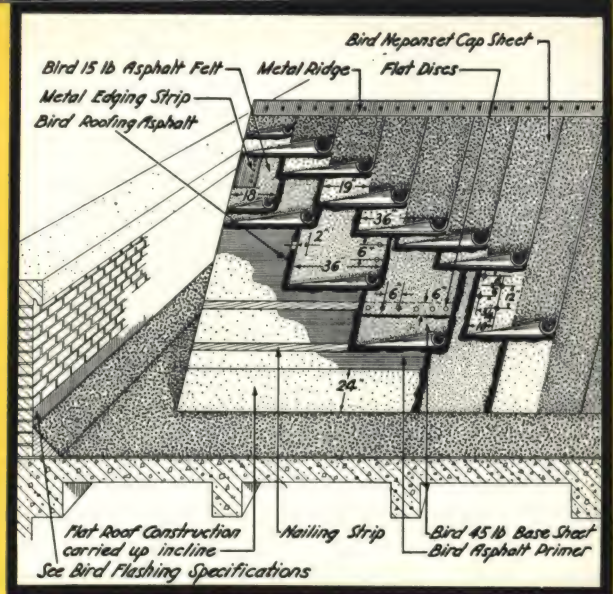
BIRD 10 YEAR BUILT-UP ROOF, MINERAL SURFACE

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 4" up in 1'-0"

SPECIFICATION NO. 208—TYPE B-NC

BILL OF MATERIALS PER 100 SQUARE FEET

Primer—Bird Asphalt Primer	10 lbs.
Base Sheet—1 layer Bird 45 lb. Base Sheet	45 lbs.
Asphalt—Bird Roofing Asphalt	90 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—2 layers Bird Neponset Cap Sheet	88 lbs.



Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Primer—Shall be Bird Asphalt Primer.

Base Sheet—Shall be Bird 45 lb. Base Sheet for Built-up Roofs,

thirty-six (36) ins. wide weighing approximately forty-five (45) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Neponset Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately eighty-eight (88) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wooden nailing strips, shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface to be roofed and flashed shall be coated with Bird Asphalt Primer and allowed to dry.
- Entire roof surface shall be covered with one (1) layer of Bird 45 lb. Base Sheet embedded full width in Bird Roofing Asphalt No. 18 and lapped two (2) ins. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18, and nailed on six (6) in. centers.
- Bird Neponset Cap Sheet shall be laid in two ply construction over the Base Sheet, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. The felt, or selvage portion of the Cap Sheet, shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and ten (10) ins. from edge, spacing nails twelve (12) ins. center to center.

Note: On inclines under three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid perpendicular to the pitch. On inclines over three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid parallel with the pitch.

All Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

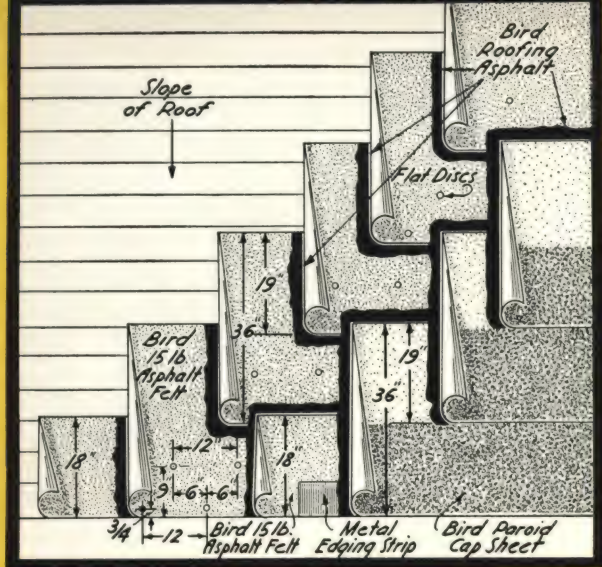
Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.



BIRD 10 YEAR BUILT-UP ROOF, ASBESTINE TALC SURFACE

Over Wood or Precast Gypsum Decks
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 303—TYPE 215-A-PW

BILL OF MATERIALS PER 100 SQUARE FEET

Asphalt Felt—2 layers Bird 15 lb. Asphalt Felt	31 lbs.
Asphalt—Bird Roofing Asphalt	90 lbs.
Nails and Discs—1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs.	
Surfacing—2 layers Bird Paroid Cap Sheet	55 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction**—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction**—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction**—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Paroid Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire roof deck shall be covered with two (2) plies of Bird 15 lb. Asphalt Felt, lapped nineteen (19) ins., and the nineteen (19) in. lap embedded in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and nine (9) ins. from lower edge of the sheet, spacing the nails twelve (12) ins. center to center.
- Bird Paroid Cap Sheet shall be laid in two ply construction over the Felt, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.

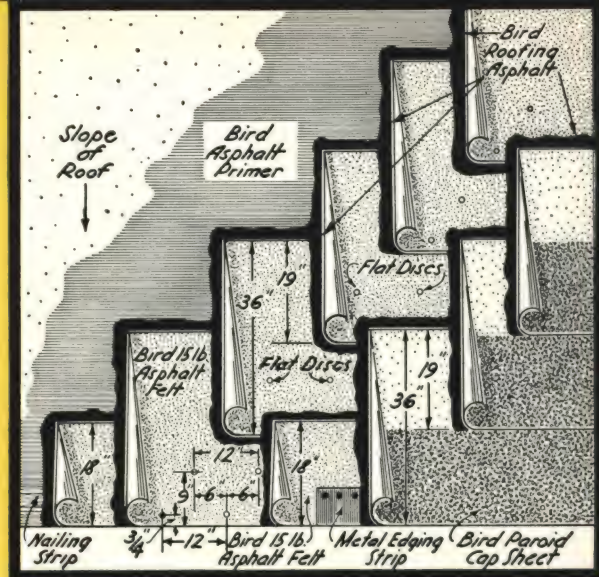
BIRD 10 YEAR BUILT-UP ROOF, ASBESTINE TALC SURFACE

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 1" to 6" in 1'-0"

SPECIFICATION NO. 304—TYPE 215-A-PC

BILL OF MATERIALS PER 100 SQUARE FEET

Primer—Bird Asphalt Primer	10 lbs.
Asphalt Felt—2 layers Bird 15 lb. Asphalt Felt	31 lbs.
Asphalt—Bird Roofing Asphalt	120 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—2 layers Bird Paroid Cap Sheet	55 lbs.



When Used Over Bird Insulated Decks, No Primer Is Required

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Primer—Shall be Bird Asphalt Primer.

Felt—Shall be Bird 15 lb. Asphalt Felt thirty-six (36) ins. wide weighing approximately fifteen (15) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Paroid Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface to be roofed and flashed shall be coated with Bird Asphalt Primer and allowed to dry.
- Entire roof deck shall be covered with two (2) plies of Bird 15 lb. Asphalt Felt, lapped nineteen (19) ins., and each sheet embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. Each sheet shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and nine (9) ins. from lower edge of the sheet, spacing the nails twelve (12) ins. center to center.
- Bird Paroid Cap Sheet shall be laid in two ply construction over the Felt, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft.

All Felts and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

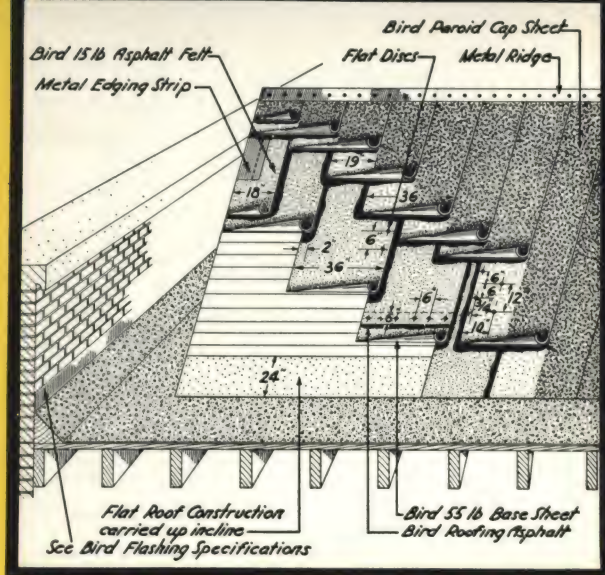
Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.



BIRD 10 YEAR BUILT-UP ROOF, ASBESTINE TALC SURFACE

Over Wood or Precast Gypsum Decks
Slope 4" up in 1'-0"

SPECIFICATION NO. 301—TYPE B-PW

BILL OF MATERIALS PER 100 SQUARE FEET

Base Sheet—1 layer Bird 55 lb. Base Sheet.....	55 lbs.
Asphalt—Bird Roofing Asphalt	60 lbs.
Nails and Discs—1" barbed nails for wood or 1½" cut nails for gypsum, through flat tinned discs.	
Surfacing—2 layers Bird Paroid Cap Sheet.....	55 lbs.

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Base Sheet—Shall be Bird 55 lb. Base Sheet for Built-up Roofs,

thirty-six (36) ins. wide weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Paroid Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface shall be covered with one (1) layer of Bird 55 lb. Base Sheet lapped two (2) ins. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18 and nailed on six (6) in. centers.
- Bird Paroid Cap Sheet shall be laid in two ply construction over the Base Sheet, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. The felt, or selvage portion of the Cap Sheet, shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and ten (10) ins. from edge, spacing nails twelve (12) ins. center to center.

Note: On inclines under three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid perpendicular to the pitch. On inclines over three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid parallel with the pitch.

All Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.

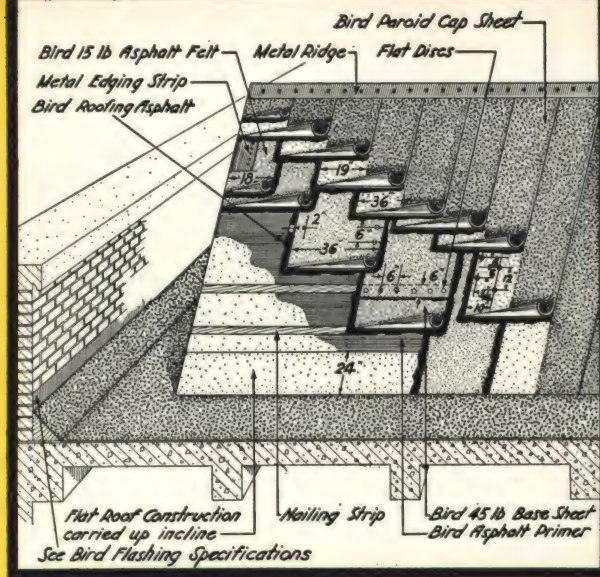
BIRD 10 YEAR BUILT-UP ROOF, ASBESTINE TALC SURFACE

Over Poured Concrete, Gypsum Decks,
or Bird Roof Insulator
Slope 4" up in 1'-0"

SPECIFICATION NO. 302—TYPE B-PC

BILL OF MATERIALS PER 100 SQUARE FEET

Primer—Bird Asphalt Primer	10 lbs.
Base Sheet—1 layer Bird 45 lb. Base Sheet	45 lbs.
Asphalt—Bird Roofing Asphalt	90 lbs.
Nails and Discs—1" barbed nails for wood nailing strips or 1½" cut nails for other materials, through flat tinned discs.	
Surfacing—2 layers Bird Paroid Cap Sheet	55 lbs.



When Used Over Bird Insulated Decks, No Primer Is Required

Work Included

The work proposed under this specification shall include all labor, material, equipment and services necessary for, and relevant to, the installation of Bird Specification No. (), Type () Built-up Roof and Bird Flashing (state type) to (state in detail the surfaces to be covered).

Preliminary Work by Others

The preparation of the roof deck, adjoining vertical surfaces and metal construction (unless specified in Work Included) is *not* a part of the Roofing Contract but will be installed and furnished by others and shall include the following work:

- Roof Construction—Including cants, coves or fillets, shall be properly graded to conduct all water into gutters and roof drains, leaving all surfaces smooth and clean, in a satisfactory condition to receive roofing.
- Vertical Wall Construction—Including parapet walls, curbs, etc. Non-combustible walls (brick excepted) which are to receive Bird Flashing shall be provided with a nailing strip centered five (5) ins. above roof. Curbs of similar construction shall be provided with a nailing strip at top. (Where Bird Flashings are to extend through walls or under coping, walls will be built to proper height and left ready to receive flashing.)
- Metal Construction—Including roof drains, sheet metal flanges required at pipes, vents, conductor heads or other openings through roof, etc.

Inspection of Preliminary Work

The Roofing Contractor shall examine all surfaces on which or against which his work is to be applied and shall notify the Architect or General Contractor if for any reason there are defects which he considers detrimental to the installation of his materials. He shall see to it that all defects are corrected, all surfaces properly sloped to drains, etc., and all roof surfaces clean and dry before installing his materials. Application of roofing by Roofing Contractor shall be an acceptance of surfaces.

Materials

All Roofing Materials shall be as manufactured by Bird & Son, inc., and delivered to the job in the original packages, bearing the manufacturer's labels.

Primer—Shall be Bird Asphalt Primer.

Base Sheet—Shall be Bird 45 lb. Base Sheet for Built-up Roofs,

thirty-six (36) ins. wide weighing approximately forty-five (45) lbs. per one hundred (100) sq. ft.

Cap Sheet—Shall be Bird Paroid Cap Sheet thirty-six (36) ins. wide with nineteen (19) in. selvage weighing approximately fifty-five (55) lbs. per one hundred (100) sq. ft. in place.

Asphalt—Shall be Bird No. 18 Roofing Asphalt.

Nails—For wood or wooden nailing strips shall be one (1) in. barbed nails driven through flat metal discs (or approved large head roofing nails). For gypsum or other composition decks, shall be one and one-half (1½) in. cut nails driven through flat metal discs.

Installation

- Entire surface to be roofed and flashed shall be coated with Bird Asphalt Primer and allowed to dry.
- Entire roof surface shall be covered with one (1) layer of Bird 45 lb. Base Sheet embedded full width in Bird Roofing Asphalt No. 18 and lapped two (2) in. at edges and six (6) ins. at ends. Laps shall be cemented with hot Bird Roofing Asphalt No. 18, and nailed on six (6) in. centers.
- Bird Paroid Cap Sheet shall be laid in two ply construction over the Base Sheet, lapped nineteen (19) ins. and embedded its full width in Bird Roofing Asphalt No. 18 applied at the rate of thirty (30) lbs. of Roofing Asphalt per mopping per one hundred (100) sq. ft. The felt, or selvage portion of the Cap Sheet, shall be nailed in two (2) staggered parallel rows three-quarters (¾) in. and ten (10) ins. from edge, spacing nails twelve (12) ins. center to center.

Note: On inclines under three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid perpendicular to the pitch. On inclines over three (3) ins. per foot, Base Sheet and Cap Sheet shall be laid parallel with the pitch.

All Base Sheets and Cap Sheets shall be laid without wrinkles or buckles, and be turned up two (2) ins. on, but not sealed to, all vertical surfaces. All Felts and Cap Sheets shall be thoroughly broomed into the hot asphalt to secure proper bond at all points.

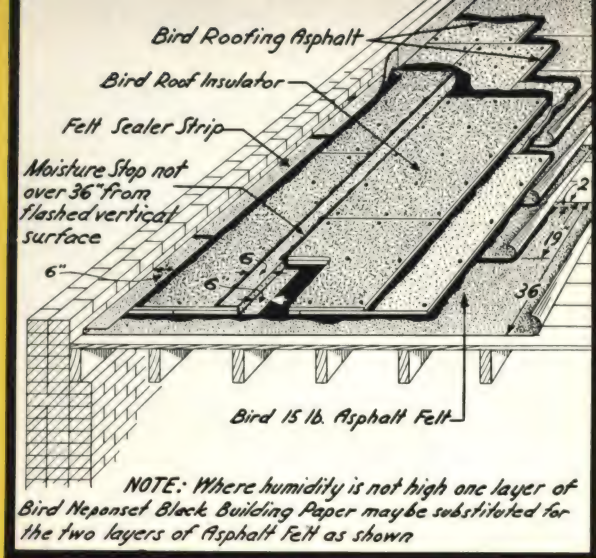
Flashing

(Copy from Bird Flashing Specifications.)

Bond

If desired, where Bird & Son, inc., inspection is available, the following may be added for roofs of fifty or more squares:

The Roofing Contractor shall be approved by Bird & Son, inc., and shall furnish a Bird Ten-Year Guarantee Bond to cover the roofing applied under this contract.



BIRD INSULATION FOR HIGH AND LOW HUMIDITY CONDITIONS

Over Wood or Precast Gypsum Decks For Installation Under Bird Built-up Roof

SPECIFICATION NO. 400

Materials

All Asphalt, Building Paper, Asphalt Felt, Rosin Sized Sheathing, and Roof Insulator, shall be those manufactured by Bird & Son, inc., and shall be delivered to the job in the original packages bearing the manufacturer's label.

Note: Bird Roof Insulator is made in sheets 24 ins. x 47 ins. All sheets are 7/16 in. thick.

Bond

Where Roof Insulation is to be covered by a Bird Bonded Built-up Roof and in locations where Bird & Son, inc., inspection is available, the following may be added:

The Roofing Contractor shall furnish a Bird (state number of years Bond is to run) Year Bond to cover the Roofing to be applied over the Roof Insulation included in this contract.

INSTALLATION FOR HIGH HUMIDITY CONDITIONS

(1) Preparation of Roof Deck to Receive Insulation—

Two (2) plies of Bird 15 lb. Asphalt Felt shall be laid over entire roof deck, lapped nineteen (19) ins. and each lap shall be sealed with Bird Roofing Asphalt, keeping Bird Roofing Asphalt back two (2) ins. from edge of underlying sheet. These sheets shall be spot-nailed sufficiently to hold sheets in place.

Note: Where Bird 15 lb. Tarred Felt and Pitch are used in place of Bird 15 lb. Asphalt Felt and Bird Roofing Asphalt, roof deck shall be covered with one (1) ply of Bird 30 lb. Rosin Sized Sheathing lapped two (2) ins. and nailed twelve (12) ins. on centers. Application of Bird 15 lb. Tarred Felt shall follow procedure as above.

(2) Sealing Strip—

The underlying sheets shall extend up six (6) in. plus thickness of Roof Insulation on all walls and vertical surfaces and shall finally be turned over on, and solidly mopped to, top surface of Bird Roof Insulator when laid.

(3) Application of One or More Layers of Insulation—

Bird Roof Insulator shall be applied directly over the Asphalt Felt, embedding each sheet its full width in a hot mopping of Bird Roofing Asphalt applied at the rate of thirty (30) lbs. per mopping per one hundred (100) sq. ft., breaking joints both between sheets in same layer and sheets in successive layers.

(3a) *For One Layer*—Each sheet of Bird Roof Insulator shall be nailed through into sheathing, using one and one-half (1½) in. galvanized Roofing Nails spaced twelve (12) ins. on centers, firmly securing all edges and intermediate points.

(3b) *For Two or More Layers*—First layer of Bird Roof Insulator

shall be nailed with only sufficient nails to hold sheet in place. Successive layers of Bird Roof Insulator shall be laid, embedding each sheet in a hot mopping of Bird Roofing Asphalt, and breaking joints with preceding layer. Final layer of Bird Roof Insulator shall be nailed through to roof deck, using approved large head galvanized Roofing Nails sufficiently long to penetrate at least three-quarters (¾) in. into wooden roof deck below. Nails shall be placed along all edges and at intermediate points, spaced twelve (12) ins. on centers and not more than two (2) ins. from edge of sheet carrying one (1) row of nails staggered longitudinally through center of each sheet.

(4) Moisture Stop—

(4a) Roof area shall be divided up into sections not more than twenty-four (24) ft. square by means of twelve (12) in. strips of Bird 15 lb. Asphalt Felt cemented to roof deck below, carried up and over Insulation and cemented to top ply of Bird Roof Insulator. These Moisture Stops shall begin not further than thirty-six (36) ins. from all vertical flashed surfaces and shall be carried out in such a manner that moisture seepage in from a flashed surface will be checked by Moisture Stop before it has traversed more than thirty-six (36) ins. from vertical surface.

(4b) All exposed edges of Insulation at eaves, gable ends, etc., shall be sealed by mopping one (1) ply of Bird 15 lb. Asphalt Felt up and over the exposed edge and to top of the final layer of Bird Roof Insulator.

INSTALLATION FOR LOW HUMIDITY CONDITIONS

Change paragraph (1) above to read as follows:

(1) Preparation of Roof Deck to Receive Insulation—

Entire roof deck shall be covered with one (1) layer of Bird

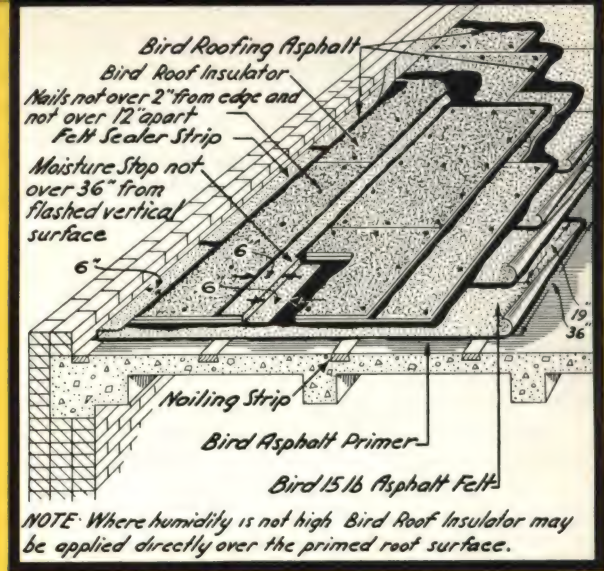
Neponset Black Building Paper, lapped six (6) ins. Laps shall be nailed sufficiently to hold sheets in place.

(Balance of specification remains the same.)

BIRD INSULATION FOR HIGH AND LOW HUMIDITY CONDITIONS

Over Concrete Decks For Installation Under Bird Built-up Roof

SPECIFICATION NO. 401



Materials

All Asphalt Primer, Asphalt, Building Paper, Asphalt Felt, Rosin Sized Sheathing, and Roof Insulator shall be those manufactured by Bird & Son, inc., and shall be delivered to the job in the original packages bearing the manufacturer's label.

Note: Bird Roof Insulator is made in sheets 24 ins. x 47 ins. All sheets are 7/16 in. thick.

Bond

Where Roof Insulation is to be covered by a Bird Bonded Built-up Roof and in locations where Bird & Son, inc., inspection is available, the following may be added:

The Roofing Contractor shall furnish a Bird (state number of years Bond is to run) Year Bond to cover the Roofing to be applied over the Roof Insulation included in this contract.

INSTALLATION FOR HIGH HUMIDITY CONDITIONS

(1) Preparation of Roof Deck to Receive Insulation—

Entire concrete deck shall be primed with one (1) coat of Bird Asphalt Primer and dried prior to the installation of Bird Roof Insulator.

(2) Application of One or More Layers of Asphalt Felt—

Primed roof deck shall be covered with two (2) layers of Bird 15 lb. Asphalt Felt, lapped nineteen (19) ins. and thoroughly embedded in hot Bird Roofing Asphalt. These waterproof sheets shall extend up six (6) ins. plus thickness of Roof Insulation on all walls and vertical surfaces and shall finally be turned over on, and solidly mopped to, top surface of Bird Roof Insulator when laid.

(3) Application of One or More Layers of Insulation—

The first layer of Bird Roof Insulator shall be applied directly over this protected roof deck, embedding the sheet in a hot mopping of Bird Roofing Asphalt applied at the rate of thirty (30) lbs. per mopping per one hundred (100) sq. ft., breaking joints both between sheets of the same layer and sheets in successive layers. The upturned edges of the waterproof sheets shall then be mopped solidly to top of final layer of Bird Roof Insulator.

(3a) *For One Layer*—Where roof deck permits nailing, each sheet of Bird Roof Insulator shall be nailed through to the roof deck, spacing nails twelve (12) ins. on centers, firmly securing all edges and intermediate points.

(3b) *For Two or More Layers*—First layer of Bird Roof Insulator shall be nailed with only sufficient nails to hold sheet in place. Successive layers of Bird Roof Insulator shall be laid, embedding each sheet in a hot mopping of Bird Roofing Asphalt, and breaking joints with preceding layer. Final layer of Bird Roof Insulator shall be nailed through to roof deck, using approved large head galvanized Roofing Nails sufficiently long to penetrate at least three-quarters ($\frac{3}{4}$) in. into wooden nailing strip embedded in the concrete roof deck. Nails shall be placed along all edges and at intermediate points, spaced twelve (12) ins. on centers and not more than two (2) ins. from edge of sheet (where character of deck permits).

(4) Moisture Stop—

(4a) Roof area shall be divided up into sections not more than twenty-four (24) ft. square by means of twelve (12) in. strips of Bird 15 lb. Asphalt Felt cemented to roof deck below, carried up and over Insulation and cemented to top ply of Bird Roof Insulator. These Moisture Stops shall begin not further than thirty-six (36) ins. from all vertical flashed surfaces and shall be carried out in such a manner that moisture seepage in from a flashed surface will be checked by Moisture Stop before it has traversed more than thirty-six (36) ins. from vertical surface.

(4b) All exposed edges of Insulation at eaves, gable ends, etc., shall be sealed by mopping one (1) ply of Bird 15 lb. Asphalt Felt up and over the exposed edge and to top of the final layer of Bird Roof Insulator.

INSTALLATION FOR LOW HUMIDITY CONDITIONS

Add to paragraph (1) above the following paragraph (1a):

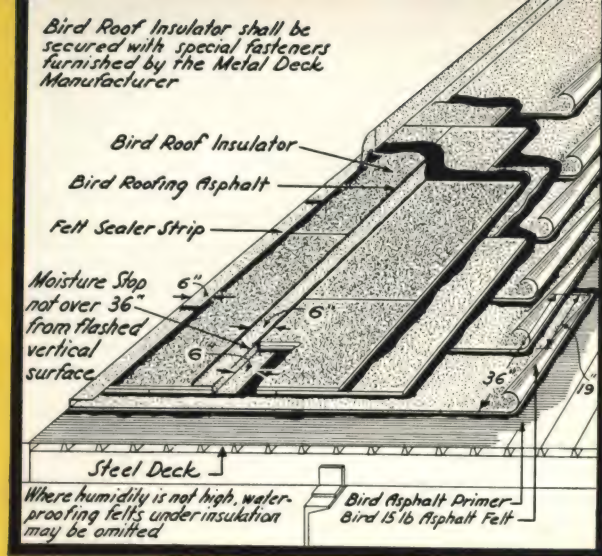
(1a) *Sealing Strip*—Where insulation occurs against a vertical wall, a Sealing Strip of Bird 15 lb. Asphalt Felt shall be laid over the priming coat to extend six (6) ins. on the deck and six (6) ins. up against the vertical wall, and shall finally be turned over on, and solidly mopped to, top surface of Bird Roof Insulator when laid.

Omit paragraph (2) above and change paragraph (3) above to read as follows:

(3) Application of One or More Layers of Insulation—

Bird Roof Insulator shall be applied directly over the primed roof deck, embedding each sheet in a hot mopping of Bird Roofing Asphalt applied at the rate of thirty (30) lbs. per mopping per one hundred (100) sq. ft., breaking joints both between sheets of the same layer and sheets in successive layers.

(Balance of specification remains the same.)



BIRD INSULATION FOR HIGH AND LOW HUMIDITY CONDITIONS

Over Steel Decks For Installation Under Bird Built-up Roof

SPECIFICATION NO. 402

Materials

All Asphalt Primer, Asphalt, Asphalt Felt, and Roof Insulator shall be those manufactured by Bird & Son, inc., and shall be delivered to the job in the original packages bearing the manufacturer's label.

Note: Bird Roof Insulator is made in sheets 24 ins. x 47 ins. All sheets are 7/16 in. thick.

Bond

Where Roof Insulation is to be covered by a Bird Bonded Built-up Roof and in locations where Bird & Son, inc., inspection is available, the following may be added:

The Roofing Contractor shall furnish a Bird (state number of years Bond is to run) Year Bond to cover the Roofing to be applied over the Roof Insulation included in this contract.

INSTALLATION FOR HIGH HUMIDITY CONDITIONS

(1) Preparation of Roof Deck to Receive Insulation—

Entire steel deck shall be primed with one (1) coat of Bird Asphalt Primer and dried prior to the installation of Bird Roof Insulator. Primer will not be required on decks which have been finished with a shop coat of paint.

(2) Application of One or More Layers of Asphalt Felt—

Primed roof deck shall be covered with two (2) layers of Bird 15 lb. Asphalt Felt, lapped nineteen (19) ins. and thoroughly embedded in hot Bird Roofing Asphalt.

These waterproof sheets shall extend up six (6) ins. plus thickness of Roof Insulation on all walls and vertical surfaces and shall finally be turned over on, and solidly mopped to, the top surface of Bird Roof Insulator when laid.

(3) Application of One or More Layers of Insulation—

Bird Roof Insulator shall be applied directly over this protected roof deck, embedding each sheet its full width in a hot mopping of Bird Roofing Asphalt applied at the rate of thirty (30) lbs. per mopping per one hundred (100) sq. ft., breaking joints both between sheets of the same layer and sheets in successive layers. The upturned edges of water-

proof sheets shall then be mopped solidly to top of the final layer of Bird Roof Insulator.

(3a) *Special Screws, Nails, etc.*—Each sheet of Bird Roof Insulator shall be securely fastened to the metal deck by means of special screws, nails, etc., furnished by the steel deck manufacturer and as agreed upon by the architect.

(4) Moisture Stop—

(4a) Roof area shall be divided up into sections not more than twenty-four (24) ft. square by means of twelve (12) in. strips of Bird 15 lb. Asphalt Felt cemented to roof deck below, carried up and over Insulation and cemented to top ply of Bird Roof Insulator. These Moisture Stops shall begin not further than thirty-six (36) ins. from all vertical flashed surfaces and shall be carried out in such a manner that moisture seepage in from a flashed surface will be checked by Moisture Stop before it has traversed more than thirty-six (36) ins. from vertical surface.

(4b) All exposed edges of Insulation at eaves, gable ends, etc., shall be sealed by mopping one (1) ply of Bird 15 lb. Asphalt Felt up and over the exposed edge and to top of the final layer of Bird Roof Insulator.

INSTALLATION FOR LOW HUMIDITY CONDITIONS

Add to paragraph (1) above the following paragraph (1a):

(1a) *Sealing Strip*—Where insulation occurs against a vertical wall, a Sealing Strip of Bird 15 lb. Asphalt Felt shall be laid over the priming coat to extend six (6) ins. on the deck and six (6) ins. up against the vertical wall, and shall finally be turned over on, and solidly mopped to, top surface of Bird Roof Insulator when laid.

Omit paragraph (2) above and change paragraph (3) above to read as follows:

(3) Application of One or More Layers of Insulation—

Bird Roof Insulator shall be applied directly over the primed steel deck, embedding each sheet its full width in a hot mopping of Bird Roofing Asphalt applied at the rate of thirty (30) lbs. per mopping per one hundred (100) sq. ft., breaking joints between sheets in same layer and sheets in successive layers.

(Balance of specification remains the same.)

BIRD FLASHINGS WITH BIRD BUILT-UP ROOFS

Where Sheet Metal Base and Cap Flashing Are Specified

SPECIFICATION NO. 5

Preliminary

All Felts, Base Sheets and Cap Sheets shall be cut off at the wall line without turning up.

Flashing shall be installed before the application of gravel, slag or tile to the roof surface.

Preparation of Surfaces to Be Flashing

All metal to which Asphalt is to be applied shall be coated with Bird Asphalt Primer and allowed to dry.

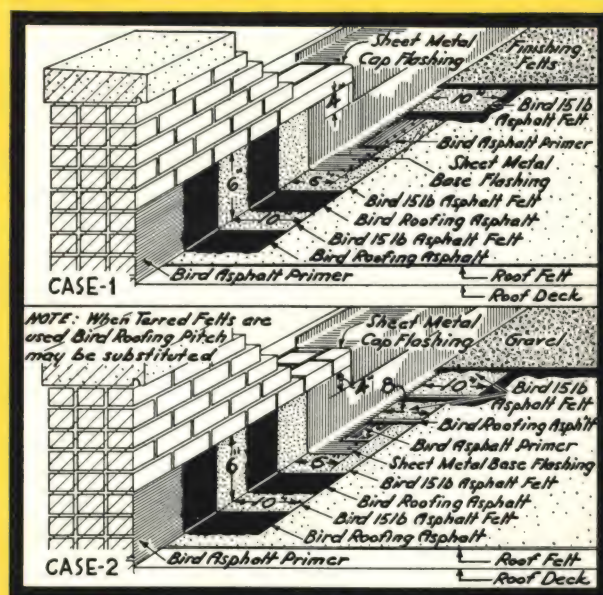
All masonry surfaces to be flashed shall be coated with Bird Asphalt Primer and allowed to dry.

Application of Base Flashing

- (1) **Case I**—Where roofing is composed of a heavy Base Sheet or a Base Course of 15 lb. Asphalt Felts, the Base Flashing shall be installed directly over the Base Felts and under the Finishing Felts or Cap Sheets.
 - (1a) Two (2) layers of Bird 15 lb. Asphalt Felt extending six (6) ins. up on vertical wall and ten (10) ins. out on roof, shall be applied, embedding each in a hot mopping of Bird Roofing Asphalt.
 - (1b) Sheet Metal Base Flashing shall extend not less than six (6) ins. up on vertical wall and not less than six (6) ins. out on roof over the base felts. The angle formed in the flashing shall not be sharply bent but shall be rounded and the flashing shall be nailed along its edge into deck or wood nailing strips provided therein.
 - (1c) Where asphalt is used, metal flashing on the deck shall be primed with Bird Asphalt Primer and allowed to dry.
 - (1d) A ten (10) in. strip of Bird 15 lb. Asphalt Felt shall be embedded in a hot mopping of Bird Roofing Asphalt over the metal flashing extending on the roof. Finishing Felts as called for in Roofing Specification shall then be applied over the above Felt Strip.
- (2) **Case II**—Where Roofing Felts are laid in shingle construction, Base Flashing shall be installed after all Roofing Felts have been laid and before application of Asphalt or Pitch, gravel or slag surfacing.

Note: In roofs employing Pitch, either Bird Roofing Asphalt or Bird Roofing Pitch may be used in the construction of flashings where Asphalt Mopping is specified.

- (2a) Two (2) layers of Bird 15 lb. Asphalt Felt extending six (6) ins. up on vertical wall and ten (10) ins. out on roof, shall be applied, embedding each in a hot mopping of Bird Roofing Asphalt.



- (2b) Sheet Metal Base Flashing shall extend not less than six (6) ins. up on vertical wall and not less than six (6) ins. out on roof over the base felts. The angle formed in flashing shall not be sharply bent but shall be rounded and the flashing shall be nailed along its edge into deck or wood nailing strips provided therein.
- (2c) Where asphalt is used, metal flashing on the deck shall be primed with Bird Asphalt Primer and allowed to dry.
- (2d) An eight (8) in. strip and a ten (10) in. strip of Bird 15 lb. Asphalt Felt shall be embedded in a hot mopping of Bird Roofing Asphalt over the metal flashing extending on the roof. The roof shall then be finished over the Felt Strip with gravel, slag or tile as called for in Roofing Specification.

Application of Cap Flashing

Metal Cap Flashing shall be bent down over the Base Flashing so that Cap Flashing shall lap Base Flashing four (4) ins.

Where Raggle Block Is Specified

SPECIFICATION NO. 6

Preliminary

The Raggle Block shall be set in masonry wall with the bottom of the Raggle Block in a line five (5) ins. from, and parallel with, the grade line of roof at wall. Raggle Block shall be set in Portland Cement mortar with all joints properly pointed, and the groove shall be thoroughly cleaned of any foreign material.

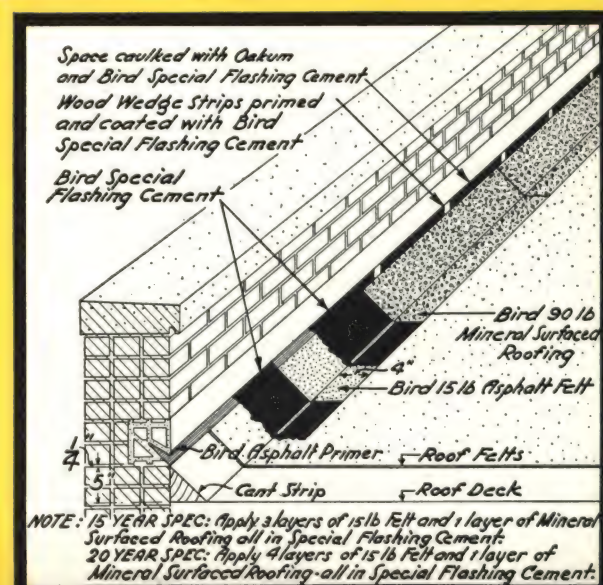
Cant Strips, constructed of material that will permit nailing, shall be installed at the angle formed by intersection of vertical surface with the roof deck. Upper edge of Cant Strip shall be approximately one-quarter ($\frac{1}{4}$) in. below groove of Raggle Block. Face of Cant Strip shall be built parallel with bottom of groove of the Raggle Block.

All Roofing Felts, Base Sheets and Cap Sheets shall be laid before the Flashing is applied and shall be carried up to top of the cant and cut off at the wall line.

Flashing shall be installed before the application of gravel, slag or tile to roof surface.

Application of Flashing

- (1) A coat of Bird Asphalt Primer shall be applied to groove of Raggle Block and allowed to dry.



- (2) A layer of Bird Special Flashing Cement approximately one-eighth ($\frac{1}{8}$) in. thick shall be applied for full depth of the groove of Raggle Block and over roofing felts to a point on deck four (4) ins. from bottom of Cant Strip.
- (3) One (1) layer of Bird 15 lb. Asphalt Felt and one (1) layer of Bird 90 lb. Mineral Surfaced Roofing shall be cut into suitable widths to extend from back of groove of Raggle Block out on the roof four (4) ins.
- (4) The Bird 15 lb. Asphalt Felt shall be embedded in the Special Flashing Cement.
- (5) The Asphalt Felt shall be coated with a layer of Bird Special Flashing Cement. The Mineral Surfaced Roofing shall be em-

bedded in the Special Flashing Cement, breaking joints with the previously applied 15 lb. Asphalt Felt. End laps shall be not less than three (3) ins.

- (6) Wood wedge strips, primed and coated with Bird Special Flashing Cement shall be driven into flashing groove on twelve (12) in. centers and at all laps. Remaining space in flashing groove shall be caulked with Bird Special Flashing Cement.

Note: 15 Year Roof—Three (3) layers of Bird 15 lb. Asphalt Felt and one (1) layer of Mineral Surfaced Roofing shall all be embedded in Bird Special Flashing Cement.

20 Year Roof—Four (4) layers of Bird 15 lb. Asphalt Felt and one (1) layer of Mineral Surfaced Roofing shall all be embedded in Bird Special Flashing Cement.

Where Flashing Is Not Less Than 8" High

SPECIFICATION NO. 1

Preliminary

Cant Strips constructed of material that will permit nailing, shall be installed at the angle formed by intersection of vertical surface with roof. Cant Strip shall extend up the vertical surface approximately four (4) ins. and have an angle of forty-five (45) degrees with the vertical. All measurements "Up" on the vertical surfaces and "Out" on the roof deck shall be made from line of intersection of cant with the vertical surface and the line of intersection of cant with the roof surface, respectively.

All Roofing Felts, Base Sheets and Cap Sheets shall be laid before the Flashing is applied and shall be brought up the face of cant

and turned up two (2) ins. on, but not cemented to, all vertical surfaces to be flashed.

Flashing shall be installed before application of gravel, slag or tile to the roof surface.

Preparation of Surfaces to Be Flashing

All masonry surfaces to be flashed shall be coated with Bird Asphalt Primer and allowed to dry.

Application of Base Flashing

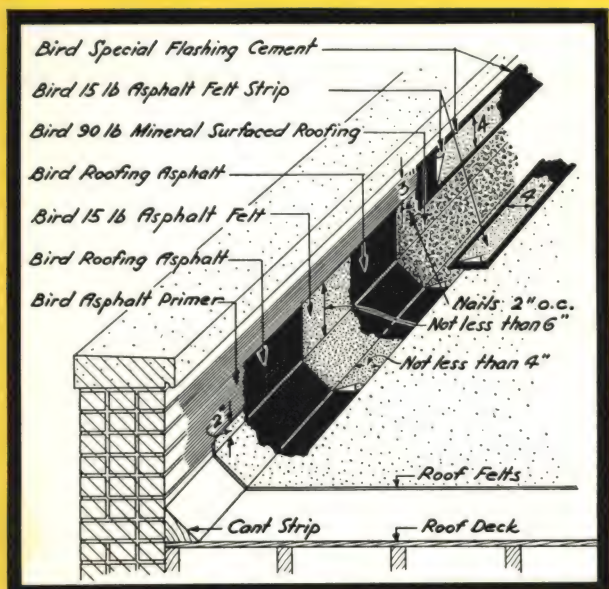
- (1) Base Flashing shall be composed of one (1) layer of Bird 15 lb. Asphalt Felt and one (1) layer of Bird 90 lb. Mineral Surfaced Roofing cemented to underlying surface and together with hot moppings of Bird Roofing Asphalt.

Note: In roofs employing Pitch, either Asphalt or Pitch may be used where Asphalt Mopping is specified.

- (2) Base Flashing shall extend not less than six (6) ins. up on vertical surfaces and not less than four (4) ins. out on roof and shall be nailed adjacent to its upper edge and at end laps with approved large head galvanized nails spaced two (2) ins. center to center.
- (3) Edge of Base Flashing on roof shall be covered with a four (4) in. wide strip of Bird 15 lb. Asphalt Felt embedded in and coated over with Bird Roofing Asphalt.
- (4) End joints of Base Flashing shall be covered with a trowelled coat of Bird Special Flashing Cement into which shall be embedded a four (4) in. wide strip of Bird 15 lb. Asphalt Felt. Felt Strip shall be finished with a second trowelled coat of Bird Special Flashing Cement.

Application of Cap Flashing

- (1) A layer of Bird Special Flashing Cement approximately one-eighth ($\frac{1}{8}$) in. thick and not less than five (5) ins. wide shall be trowelled on to cover nail heads, the upper edge of Base Flashing and the adjoining wall surface.
- (2) A strip of Bird 15 lb. Asphalt Felt four (4) ins. wide shall be embedded in the Special Flashing Cement and an additional layer of Special Flashing Cement shall be trowelled on over the felt and finished to a feather edge and a straight line.
- (3) If a sheet metal cap flashing is specified, the above Cap Flashing shall extend to where such metal projects from wall.



Where Flashing Covers the Entire Inside Wall and Top Wall Under Copping

SPECIFICATION NO. 2

Preliminary

Cant Strips constructed of material that will permit nailing, shall be installed at the angle formed by intersection of vertical surface with roof. Cant Strip shall extend up the vertical surface approximately four (4) ins. and have an angle of forty-five (45) degrees with the vertical. All measurements "Up" on vertical surfaces and "Out" on roof deck shall be made from line of intersection of cant with vertical surface and the line of intersection of cant with roof surface respectively.

All Roofing Felts, Base Sheets and Cap Sheets shall be laid before the Flashing is applied and shall be brought up the face of cant and turned up two (2) ins. on, but not cemented to, all vertical surfaces to be flashed.

Flashing shall be installed before application of gravel, slag or tile to the roof surface.

Preparation of Surfaces to Be Flashing

All masonry surfaces to be flashed shall be coated with Bird Asphalt Primer and allowed to dry.

Application of Base Flashing

- (1) Base Flashing shall be composed of one (1) layer of Bird 15 lb. Asphalt Felt and one (1) layer of Bird 90 lb. Mineral Surfaced Roofing cemented to underlying surface and together with hot moppings of Bird Roofing Asphalt.

Note: In roofs employing Pitch, either Asphalt or Pitch may be used where Asphalt Mopping is specified.

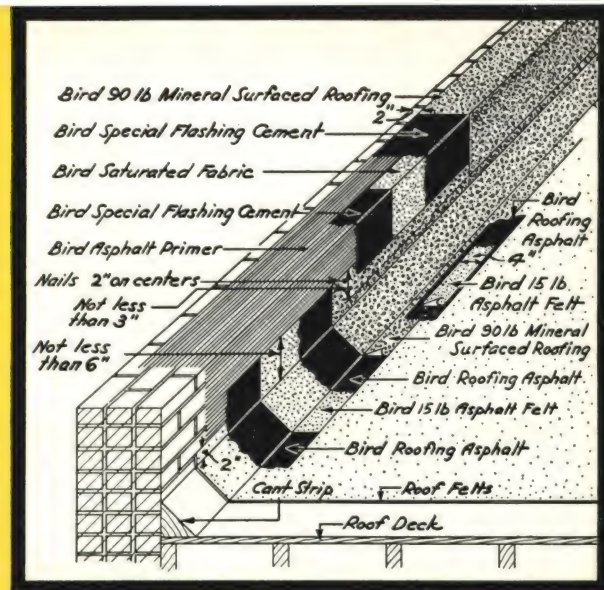
- (2) Base Flashing shall extend not less than six (6) ins. up on vertical surfaces and not less than four (4) ins. out on roof and shall be nailed adjacent to its upper edge and at end laps with approved large head galvanized nails spaced two (2) ins. center to center.
- (3) Edge of Base Flashing on roof shall be covered with a four (4) in. wide strip of Bird 15 lb. Asphalt Felt embedded in and coated over with Bird Roofing Asphalt.

- (4) End joints of Base Flashing shall be covered with a trowelled coat of Bird Special Flashing Cement into which shall be embedded a four (4) in. wide strip of Bird 15 lb. Asphalt Felt. Felt Strip shall be finished with a second trowelled coat of Bird Special Flashing Cement.

Application of Cap Flashing

- (1) A layer of Bird Special Flashing Cement approximately one-eighth ($\frac{1}{8}$) in. thick shall be trowelled on to cover nail heads, the upper edge of Base Flashing, the entire inner face of wall and top of wall under coping to within two (2) ins. of outside face of wall.
- (2) A strip of Bird Saturated Fabric eight (8) ins. wide shall be embedded in the Special Flashing Cement along the inner top corner of wall so that it shall extend four (4) ins. on top of wall and four (4) ins. on face of wall. This reinforcing Fabric Strip shall then be coated with Bird Special Flashing Cement.
- (3) A strip of Bird 90 lb. Mineral Surfaced Roofing, wide enough to extend from within two (2) ins. of outside wall under the coping and down to cover the Base Flashing at least three (3) ins., shall be embedded in Bird Special Flashing Cement.

Alternate Specification: Bird 15 lb. Asphalt Felt, coated with Bird Special Flashing Cement may be used instead of Bird 90 lb. Mineral Surfaced Roofing in the above Cap Flashing Specification.



Where Flashing Is Not Less Than 8" High With Cap Flashing Extending Through Wall

SPECIFICATION NO. 3

Preliminary

Cant Strips constructed of material that will permit nailing, shall be installed at the angle formed by intersection of vertical surface with roof. Cant Strip shall extend up the vertical surface approximately four (4) ins. and have an angle of forty-five (45) degrees with the vertical. All measurements "Up" on the vertical surfaces and "Out" on the roof deck shall be made from line of intersection of cant with the vertical surface and the line of intersection of cant with the roof surface, respectively.

All Roofing Felts, Base Sheets and Cap Sheets shall be laid before the Flashing is applied and shall be brought up the face of cant and turned up two (2) ins. on, but not cemented to, all vertical surfaces to be flashed.

Flashing shall be installed before application of gravel, slag or tile to the roof surface.

Preparation of Surfaces to Be Flashing

All masonry surfaces to be flashed shall be coated with Bird Asphalt Primer and allowed to dry.

Application of Base Flashing

- (1) Base Flashing shall be composed of one (1) layer of Bird 15 lb. Asphalt Felt and one (1) layer of Bird 90 lb. Mineral Surfaced Roofing cemented to underlying surface and together with hot moppings of Bird Roofing Asphalt.

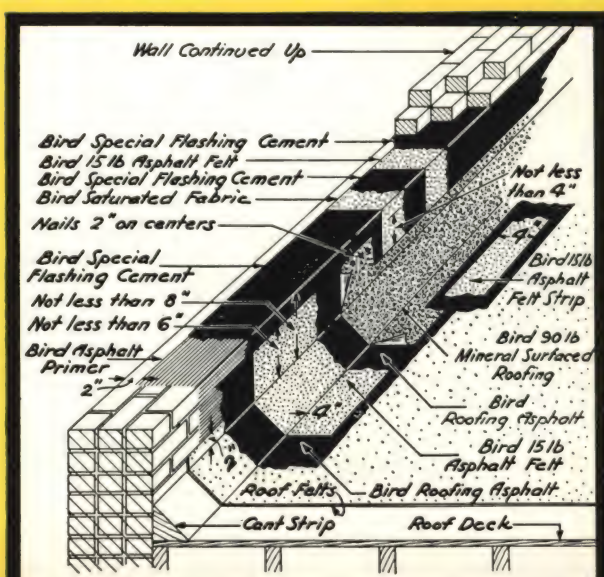
Note: In roofs employing Pitch, either Asphalt or Pitch may be used where Asphalt Mopping is specified.

- (2) Base Flashing shall extend not less than six (6) ins. up on vertical surfaces and not less than four (4) ins. out on roof and shall be nailed adjacent to its upper edge and at end laps with approved large head galvanized nails spaced two (2) ins. center to center.
- (3) Edge of Base Flashing on roof shall be covered with a four (4) in. wide strip of Bird 15 lb. Asphalt Felt embedded in and coated over with Bird Roofing Asphalt.
- (4) End joints of Base Flashing shall be covered with a trowelled coat of Bird Special Flashing Cement into which shall be embedded a four (4) in. wide strip of Bird 15 lb. Asphalt Felt. Felt Strip shall be finished with a second trowelled coat of Bird Special Flashing Cement.

Application of Cap Flashing

- (1) The construction of vertical wall shall be stopped at elevation at which the Cap Flashing is to be installed and shall be finished smooth on top. This top finish shall then be coated with a layer of Bird Special Flashing Cement approximately one-eighth ($\frac{1}{8}$) in. thick, extending to within two (2) ins. of outside face of wall.

- (2) A strip of Bird Saturated Fabric wide enough to cover the cemented portion of top of wall and to extend out from inside face of wall far enough to cover top of base flashing four (4) ins., shall be embedded in the Bird Special Flashing Cement.
- (3) A second layer of Bird Special Flashing Cement shall be applied to part of Saturated Fabric embedded on top of wall.
- (4) A strip of Bird 15 lb. Asphalt Felt, the same width as the Saturated Fabric and extending out from wall as does the Fabric, shall be embedded in Bird Special Flashing Cement.
- (5) The Felt on top of wall shall then be coated with a layer of Bird Special Flashing Cement and the portion of fabric and felt extending from wall shall be protected so that it will not be damaged during the completion of the wall.
- (6) After Base Flashing has been installed, a layer of Bird Special Flashing Cement extending from where Cap Flashing leaves the wall down over the upper edge of Base Flashing, at least four (4) ins., shall be applied.
- (7) The Saturated Fabric of the Cap Flashing shall next be embedded in Bird Special Flashing Cement.
- (8) A second layer of Bird Special Flashing Cement shall be applied over the Saturated Fabric.
- (9) The Bird 15 lb. Asphalt Felt of the Cap Flashing shall also be embedded in the Bird Special Flashing Cement.
- (10) A layer of Bird Special Flashing Cement shall be trowelled over the Asphalt Felt and finished to a feather edge and to a straight line.

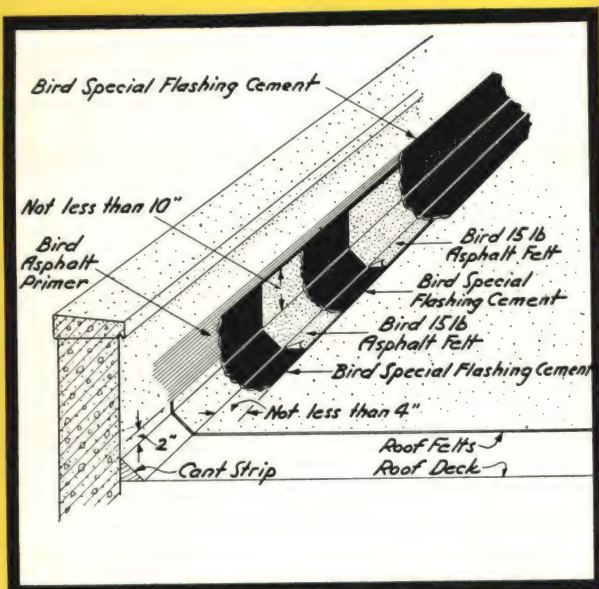


Where No Nailing Facilities Are Provided

SPECIFICATION NO. 4

Preliminary

Cant Strips constructed of material that will permit nailing, shall be installed at the angle formed by intersection of vertical surface with roof. Cant Strip shall extend up the vertical surface approximately four (4) ins. and have an angle of forty-five (45) degrees



with the vertical. All measurements "Up" on the vertical surfaces and "Out" on the roof deck shall be made from line of intersection of cant with the vertical surface and the line of intersection of cant with the roof surface, respectively.

All Roofing Felts, Base Sheets and Cap Sheets shall be laid before the Flashing is applied and shall be brought up the face of cant and turned up two (2) ins. on, but not cemented to, all vertical surfaces to be flashed.

Flashing shall be installed before application of gravel, slag or tile to the roof surface.

Preparation of Surfaces to Be Flashing

All masonry surfaces to be flashed shall be coated with Bird Asphalt Primer and allowed to dry.

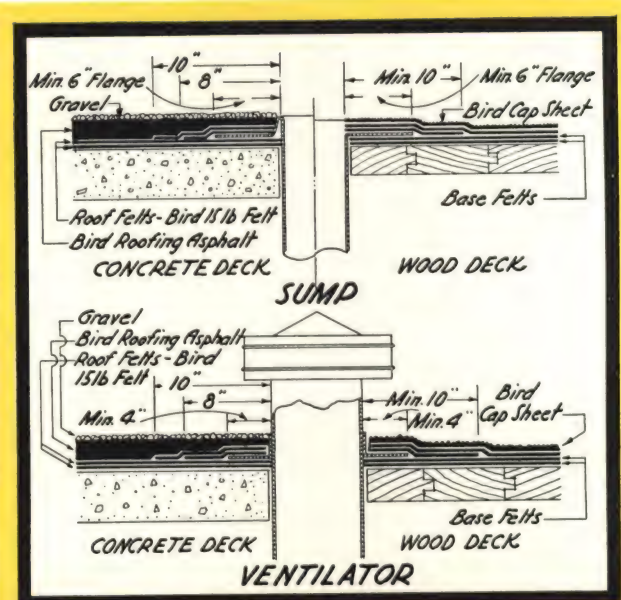
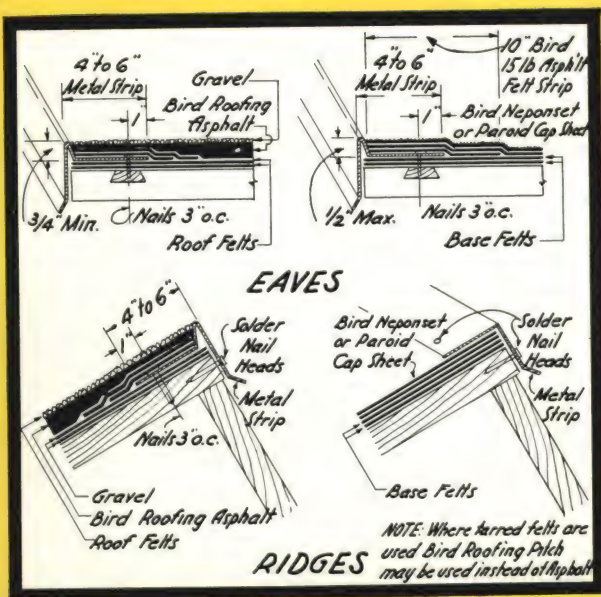
Application of Base Flashing

- (1) A layer of Bird Special Flashing Cement approximately one-eighth ($\frac{1}{8}$) in. thick shall be trowelled on the surface to receive the Flashing. The Flashing shall be carried at least ten (10) ins. high on the wall and four (4) ins. out on the roof.
- (2) A layer of Bird 15 lb. Asphalt Felt shall be embedded in the Bird Special Flashing Cement.
- (3) A second layer of Special Flashing Cement shall be applied to the Bird 15 lb. Asphalt Felt.
- (4) A second layer of Bird 15 lb. Asphalt Felt shall be embedded in the Special Flashing Cement, breaking joints with the previously applied felt.
- (5) The Flashing shall be finished by trowelling a third layer of Bird Special Flashing Cement over the surface of the Asphalt Felt, finishing to a feather edge and a straight line.

MISCELLANEOUS FLASHING DETAILS

The following details show standard construction for the finishing at Eaves, Ridges, and for Sump and Ventilator connections.

Specifications for Flanges and Edgings to meet special conditions will be furnished when requested.



INDEX TO SPECIFICATIONS BIRD BUILT-UP ROOFS

TERMS OF BOND	SPECIFICATION NUMBER	TYPE	PAGE NUMBER	ROOF DECK CONSTRUCTION	LIMITATIONS OF ROOF DECK SLOPE	TYPE OF SURFACE	Underwriter's Classification	MAKE-UP OF ROOF	NO. OF MOPPINGS	WEIGHT OF MATERIALS POUNDS PER SQUARE							TOTAL WEIGHT PER SQUARE	
										BASE SHEET	FELT	SHEATHING PAPER	ASPHALT OR PITCH	PRIMER	GRAVEL	SLAG	CAP SHEET	WITH CAP SHEET
GRAVEL OR SLAG SURFACE—FOR FLAT DECKS																		
20	101	515 AW	4	Wood or Precast Gypsum	¼-3	Gravel or Slag	A	5-15 lb. Asphalt Felts	4		78		150		400	300		628 528
20	102	415 AC	5	Concrete	¼-2		A	4-15 lb. Asphalt Felts	5		62		180	10	400	300		652 552
15	103	415 AW	6	Wood or Precast Gypsum	¼-3		A	4-15 lb. Asphalt Felts	3		62		120		400	300		582 482
15	104	315 AC	7	Concrete	¼-2		A	3-15 lb. Asphalt Felts	4		46		150	10	400	300		606 506
20	601	515 TW	4	Wood or Precast Gypsum	0-2		A	Sheathing and 5-15 lb. Tarred Felts	4		78	6	150		400	300		634 534
20	602	415 TC	5	Concrete	0-2		A	4-15 lb. Tarred Felts	5		62		180		400	300		642 542
15	603	415 TW	6	Wood or Precast Gypsum	0-2		A	Sheathing and 4-15 lb. Tarred Felts	3		62	6	120		400	300		588 488
15	604	315 TC	7	Concrete	0-2		A	3-15 lb. Tarred Felts	4		46		150		400	300		596 496

CRUSHED MINERAL SURFACE—FOR SLOPING AND STEEP DECKS

20	201	B 215 ANW	8	Wood or Precast Gypsum	1-6	White Mineral Granules	C	55 lb. Base; 2-15 lb. Asphalt Felts; Neponset (Selvage) Cap Sheet	4	55	31		120				88	294
20	202	B 215 ANC	9	Concrete	1-6		C	45 lb. Base; 2-15 lb. Asphalt Felts; Neponset (Selvage) Cap Sheet	5	45	31		150	10			88	324
15	203	B 15 ANW	10	Wood or Precast Gypsum	1-6		C	55 lb. Base; 1-15 lb. Asphalt Felt; Neponset (Selvage) Cap Sheet	3	55	15		90				88	248
15	204	B 15 ANC	11	Concrete	1-6		C	45 lb. Base; 1-15 lb. Asphalt Felt; Neponset (Selvage) Cap Sheet	4	45	15		120	10			88	278
10	205	215 ANW	12	Wood or Precast Gypsum	1-6		C	2-15 lb. Asphalt Felts; Neponset (Selvage) Cap Sheet	3		31		90				88	209
10	206	215 ANC	13	Concrete	1-6		C	2-15 lb. Asphalt Felts; Neponset (Selvage) Cap Sheet	4		31		120	10			88	249
10	207	BNW	14	Wood or Precast Gypsum	4-up		C	55 lb. Base; Neponset (Selvage) Cap Sheet	2	55			60				88	203
10	208	BNC	15	Concrete	4-up		C	45 lb. Base; Neponset (Selvage) Cap Sheet	3	45			90	10			88	233

ASBESTINE TALC SURFACE—FOR SLOPING AND STEEP DECKS

10	303	215 APW	16	Wood or Precast Gypsum	1-6	Asbestine Talc	C	2-15 lb. Asphalt Felts; Paroid (Selvage) Cap Sheet	3		31		90				55	176
10	304	215 APC	17	Concrete	1-6		C	2-15 lb. Asphalt Felts; Paroid (Selvage) Cap Sheet	4		31		120	10			55	216
10	301	BPW	18	Wood or Precast Gypsum	4-up		C	55 lb. Base; Paroid (Selvage) Cap Sheet	2	55			60				55	170
10	302	BPC	19	Concrete	4-up		C	45 lb. Base; Paroid (Selvage) Cap Sheet	3	45			90	10			55	200

ROOF INSULATION

400		20	Wood or Precast Gypsum	Application of Roof Insulation for High and Low Humidity Conditions				
401		21	Concrete	Application of Roof Insulation for High and Low Humidity Conditions				
402		22	Steel	Application of Roof Insulation for High and Low Humidity Conditions				

FLASHINGS

1		24	Base: Felts & Mineral Surface Roofing	Cap: Three Course Plastic	NOTE: Specifications for Flashings and Edgings to meet special conditions will be furnished when requested.
2		24	Base: Felts & Mineral Surface Roofing	Cap: Cover Inside Face and Top of Wall	
3		25	Base: Felts & Mineral Surface Roofing	Cap: Three Course Through Wall	
4		26	5 Course Plastic		
5		23	Metal Base and Cap		
6		23	Raggle Block Type		

Specifications covering application of roofs over insulation are combined with specifications for application over concrete.

BIRD

BUILT-UP ROOFING



TRADE
REG. U. S.



MARK
PAT. OFF.



MASTER
SPECIFICATIONS
for
BUILT-UP ROOFS

BONDED 5-10-20 YEARS





BUILT-UP ROOFING

AT the request of hundreds of architects we have condensed the various types of CAREY BUILT-UP ROOFING SPECIFICATIONS in such a manner as to enable us to reproduce every type of roof construction in a complete, comprehensive manner in this issue of SWEET'S ARCHITECTURAL CATALOGUES.

Every essential type of built-up roof construction, with definite recommendations as to the service adaptability of each, is incorporated in CAREY'S TWELVE (12) MASTER BUILT-UP ROOFING SPECIFICATIONS. In specifying any one of the twelve Master Specifications the architect should always indicate, in addition to the Master Built-up Roofing Specification number, the type of roof construction desired, i.e., Types A, B, C or D. He should also indicate any special conditions listed under "General Requirements Applying to All Types," such as: bond period, deck treatment, requirements for steep deck application and roof surfacing, etc., applying to the particular job.

Note: When application is to be over wood or gypsum decks select deck treatment in accordance with type of deck.

The minimum requirements for every item entering into the construction of Carey Built-up Roofs are well known, nationally accepted standards, re-enforced with a definite tolerance in quality. These standards of quality are established, controlled, and maintained by Carey engineers, research laboratories, and extensive modern factory facilities.

Architects may specify the types of Carey Roofs described in this catalogue with confidence, for use on all standard types of deck construction, and they are invited to correspond with the Engineering Department of THE PHILIP CAREY COMPANY for recommendations as to the roofing or waterproofing construction especially adapted to special types of deck construction or special specifications to meet unusual service conditions.

The specifications cover the following types of construction:

SLAG OR GRAVEL SURFACED ROOFS

Ten (10) and twenty (20)-year roof construction for application over all types of decks. Various types comprise:

Asphalt Saturated Rag Felt construction, slag or gravel surfaced.

Tar Saturated Rag Felt construction, slag or gravel surfaced.

Combination Asphalt Impregnated Asbestos and Asphalt Saturated Rag Felt construction, slag or gravel surfaced.

MINERAL SURFACED ROOFS

Ten (10) and twenty (20)-year roof construction for application over all types of decks. Various types comprise:

Asphalt Saturated Rag Felt construction, mineral surfaced.

Combination Asphalt Impregnated Asbestos and Asphalt Saturated Rag Felt construction, mineral surfaced.

Asphalt Impregnated Asbestos Felt construction, mineral surfaced.

ASPHALT SURFACED ROOFS

Ten (10) and twenty (20)-year roof construction for application over all types of decks. Various types comprise:

Asphalt Impregnated Asbestos Felt construction, asphalt surfaced.

Asphalt Saturated Rag Felt construction, asphalt surfaced.

Combination Asphalt Impregnated Asbestos and Asphalt Saturated Rag Felt construction, asphalt surfaced.

The recommendations governing the adaptability of each type and the application details incorporated in each type of built-up roof are the results of over half a century of manufacturing and application experience and are given in the hope that architects will carefully consider the wisdom of each recommendation.

Permanent satisfaction in built-up roof construction can only be assured when the proper type is selected to meet existing service conditions. Three vital points to be carefully considered when specifying various types of roofs are:

(1) Incline in roof deck and type of roof deck.

(2) Climatic conditions affecting the geographic location of the job.

(3) Presence of industrial gases and fumes detrimental to certain types of roof construction.

THE PHILIP CAREY COMPANY

GENERAL OFFICES AND MAIN FACTORY: LOCKLAND, OHIO

OTHER FACTORIES: FRANKLIN, OHIO; ST. LOUIS, MISSOURI; and PLYMOUTH MEETING, PA.

ASBESTOS MINES: EAST BROUGHTON, QUEBEC

BRANCHES AND DISTRIBUTORS IN ALL PRINCIPAL CITIES

For Carey Shingles and Pipe Covering, see File Index

CAREY BUILT-UP ROOFING MATERIALS

CAREY FELT (FELTEX)

The CAREY FELT (Feltex) furnished for use in Carey Built-Up Roofing Specifications is manufactured on the highest grade rag felt base and saturated with an asphalt developed especially for roofing purposes by our research laboratory and processed in our own plant. The saturant used in CAREY FELT (Feltex) is of such a nature that it allows the felt to be handled as easily in cold weather as in summertime.

CAREY FELT (Feltex) is 36 ins. wide, packaged in rolls containing four squares or 432 sq. ft. per roll, weight per 100 sq. ft., 15 lbs., weight per roll, approximately 65 lbs.

CAREY FIBEROCK

CAREY FIBEROCK as manufactured for use in Carey Built-Up Roofing Specifications consists of an asbestos felt that contains 85% asbestos fibers held together with a combining material and impregnated with a high grade asphalt saturant developed and processed in our own laboratories and plant. There are two weights of CAREY FIBEROCK. The 15-lb. Fiberock is impregnated with asphalt only, while the 20-lb. Fiberock is impregnated and coated one side with asphalt. Both weights are packaged in 3 square rolls containing 324 sq. ft. per roll, 36 ins. wide. The 15-lb. weighs 45 lbs. per roll and the 20-lb., 60 lbs. per roll.

CAREY-SEAL TAR FELT

CAREY-SEAL TAR FELT as furnished for use in Carey Built-Up Roofing Specifications is manufactured on a high grade rag felt base and saturated with a tar pitch saturant developed for this purpose. CAREY-SEAL TAR FELT is 32 ins. wide packaged in rolls containing 4 squares or 432 sq. ft. per roll; weight per 100 sq. ft., 15 lbs.; weight per roll, approximately 65 lbs.

CAREY ASBESTOS FELT

The CAREY ASBESTOS FELT BASE SHEETS furnished for use in Carey Asbestos Specification Roofs are made on an asbestos felt base of the best quality. This asbestos base is impregnated with asphalt and then coated and sanded on both sides. The saturant developed for this particular purpose and the coating asphalt is likewise an asphalt processed for coating purposes only, and thereby seals the base sheet against all attacks of moisture.

CAREY ASBESTOS FELT BASE SHEETS are packaged in two weights, 45 lbs. and 60 lbs. and are put up in one square rolls containing 108 sq. ft., the roll weight being approximately 48 lbs. for the 45-lb. sheet and approximately 65 lbs. for the 60-lb. sheet.

CAREY ASPHALT

The CAREY ROOFING ASPHALT furnished for application of Carey Specification Roofs is an asphalt blended in such a way that it contains all properties necessary to give long life and durability to the roof. CAREY ASPHALT contains practically no impurities and is 99.5% soluble in carbon disulphide. CAREY ASPHALT is packaged in open head drums containing approximately 400 lbs. per drum.

CAREY-SEAL TAR PITCH

The CAREY-SEAL TAR PITCH furnished for application of Carey Tar Pitch Specification Roofs is a high grade coal tar pitch developed for use in constructing tar or gravel roofs. This material has unusual waterproofing qualities and, therefore, tends to form the basis for a serviceable and durable roof. CAREY-SEAL TAR PITCH is packaged in drums containing approximately 500 lbs. per drum.

CAREY BUILT-UP ROOFING INDEX

20 YEAR ROOFING SPECIFICATIONS		10 YEAR ROOFING SPECIFICATIONS	
Slag or Gravel Surfaced Roofs PAGE Over wood or gypsum decks—Master Specification No. 1. 4 Over concrete decks—Master Specification No. 3..... 8 Mineral Surfaced Roofs Over wood or gypsum decks—Master Specification No. 5. 12 Over concrete decks—Master Specification No. 7..... 14 Asphalt Surfaced Roofs Over wood or gypsum decks—Master Specification No. 9. 16 Over concrete decks—Master Specification No. 11..... 19		Slag or Gravel Surfaced Roofs PAGE Over wood or gypsum decks—Master Specification No. 2. 6 Over concrete decks—Master Specification No. 4..... 10 Mineral Surfaced Roofs Over wood or gypsum decks—Master Specification No. 6. 13 Over concrete decks—Master Specification No. 8..... 15 Asphalt Surfaced Roofs Over wood or gypsum decks—Master Specification No. 10 17 Over concrete decks—Master Specification No. 12..... 20	
Carey Specifications for the Application of Roof Insulation...Page 22		Carey Flashing Details.....Page 23	

CAREY 20-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 1

20-Year Bond
5 Ply
Slag or Gravel Surface
Wood or Gypsum Decks
Asphalt or Tar Construction

THREE OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. of Asphalt or Tar per square	Weight, lbs. of Slag per square	Weight, lbs. of Gravel per square
			Rec.	Not Rec.							
A	All	Level to 2"	.....	X	Class A	5 Plies Carey Feltex (Asphalt Saturated Rag Felt)	Carey Asphalt	15	135	300	400
B	All	Level to $\frac{3}{4}$"	.....	X	Class A	5 Plies Carey-Seal Tarred Felt (Tar Saturated Rag Felt)	Carey-Seal Tar Pitch	15	150	300	400
C	All	$\frac{1}{2}$ " to 2"	X	.....	Class A	2 Plies Carey Feltex (Asphalt Saturated Rag Felt) and 3 Plies Carey Fiberock (Asphalt Impregnated Asbestos Felt)	Carey Asphalt	15	135	300	400

CAREY MASTER SPECIFICATION No. 1

General Requirements Applying to All Three Types

ROOF SURFACING

The size of Slag or Gravel used for surfacing the roof shall range from $\frac{1}{4}$ in. to $\frac{5}{8}$ in. and be clean, dry and free from dirt. When applied in extreme cold weather same shall be warmed to eliminate frost. Not less than 400 lbs. of Gravel or 300 lbs. of Slag shall be used for covering each 100 sq. ft. of roof surface.

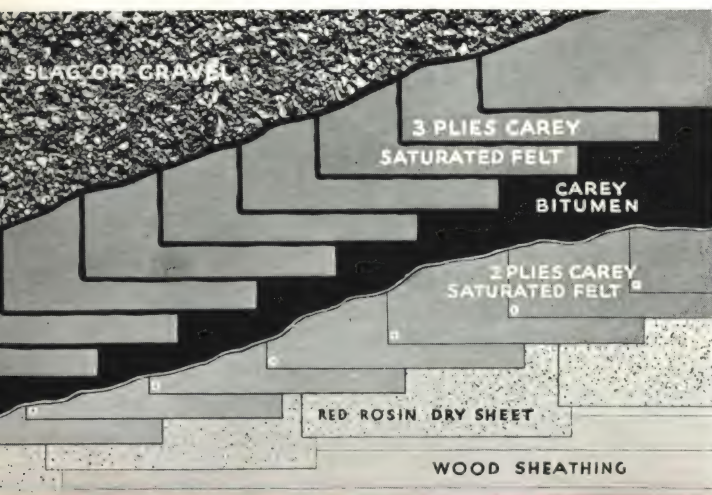
DECK TREATMENT

The roof deck over which this specification is to be applied shall be dry, free from rubbish and debris, and free from objectionable low spots and depressions. Roof must be applied during dry, favorable weather.

Note: Select one of the following paragraphs in accordance with type of deck.

Wood Decks—Before the Built-up Roofing Specification is applied the deck shall be covered with a layer of Red Rosin Sized Sheathing weighing not less than 5 lbs. per 100 sq. ft., same to be lapped approximately 2 ins. and secured to the deck by occasional nailing.

Nails to be used in securing the Built-up Roofing Specification in the manner described under "Material and Application Details" shall be either 1-in. roofing nails driven through flat tin caps, or 1-in. "Simplex" nails.



Carey 20-Year Master Built-up Roofing Specification No. 1

The drawing at the left illustrates the construction to be followed in applying all types of built-up roofs covered by Carey Master Built-up Roofing Specification No. 1, for application over wood sheathing.

When the various types of construction under Carey Master Built-up Roofing Specification No. 1 are applied over gypsum decks the Red Rosin Dry Sheet is omitted and the two plies of CAREY SATURATED FELT to be laid dry are applied directly over the gypsum deck and secured to same with nails as indicated.

Gypsum Decks—The first two sheets to be laid dry as called for in the Built-up Roofing Specification shall be applied directly over the gypsum deck and be secured to same as indicated under "Material and Application Details" with 1¾-in. roofing nails driven through flat tin caps, or 1¾-in. "Simplex" nails.

REQUIREMENTS FOR BOND

Note: *All types of roofs under Carey Master Built-up Roofing Specification No. 1 are subject to*

a Carey 20-year Surety Bond when the roof is laid strictly according to Carey Specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 20-year Surety Bond covering both material and workmanship used in the construction of this roof.

MATERIALS AND APPLICATIONS

TYPE A—SPECIFICATION NO. 1

Five plies of CAREY FELTEX (Asphalt Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 135 lbs. of CAREY ASPHALT and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 1—Type A.

The felts used in the construction of the roof shall be 36 ins. wide. The first two sheets shall be laid dry, lapped 19 ins. leaving 17 ins. exposed, and be secured to the deck by occasional nailing. To the surface thus provided a mopping of asphalt shall be applied into which, while hot, shall be embedded three sheets of felt, each sheet to overlap the previous sheet 25 ins. leaving 11 ins. exposed. Solid moppings of Asphalt shall be applied between the plies of this three-ply construction so that at no point shall felt touch felt.

To the top surface of this construction a flood coat of hot Asphalt shall be poured from a dipper and not less than 50 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. Asphalt shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 1

Five plies of CAREY-SEAL TARRED FELT (Tar Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 150 lbs. of CAREY-SEAL TAR PITCH and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 1—Type B.

The felts used in the construction of this roof shall be 32 ins. wide. The first two sheets shall be laid dry, lapped 17 ins., leaving 15 ins. exposed, and be secured to the deck by occasional nailing. To the surface thus provided a mopping of Tar Pitch shall be applied into which, while hot, shall be embedded three sheets of felt,

each sheet to overlap the previous sheet 22 ins., leaving 10 ins. exposed. Solid moppings of Tar Pitch shall be applied between the plies of this three-ply construction so that at no point shall felt touch felt.

To the top surface of this construction a flood coat of hot Tar Pitch shall be poured from a dipper and not less than 60 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Tar Pitch, while hot, Slag or Gravel shall be embedded. Tar Pitch shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 1

Two plies of CAREY FELTEX (Asphalt Saturated Rag Felt) and three plies of CAREY FIBEROCK (Asphalt Impregnated Asbestos Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 135 lbs. of CAREY ASPHALT and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 1—Type C.

The felts used in the construction of the roof shall be 36 ins. wide. The first two plies shall be CAREY FELTEX laid dry and lapped 19 ins., leaving 17 ins. exposed, and be secured to the deck by occasional nailing. To the surface thus provided a mopping of Asphalt shall be applied into which, while hot, shall be embedded three plies of CAREY FIBEROCK, each sheet to overlap the previous sheet 25 ins., leaving 11 ins. exposed. Solid moppings of Asphalt shall be applied between the plies of this three-ply construction so that at no point shall felt touch felt.

To the top surface of this construction a flood coat of hot Asphalt shall be poured from a dipper and not less than 50 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. Asphalt shall not be heated over 400° F.

CAREY 10-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 2

10-Year Bond
4 Ply
Slag or Gravel Surface
Wood or Gypsum Decks
Asphalt or Tar Construction

THREE OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. Asphalt or Tar per square	Weight, lbs. of Slag per square	Weight, lbs. of Gravel per square
			Rec.	Not Rec.							
A	All	Level to 2"	.....	X	Class A	4 Plies Carey Feltex (Asphalt Saturated Rag Felt)	Carey Asphalt	15	100	300	300
B	All	Level to 3/4"	.....	X	Class A	4 Plies Carey-Seal Tarred Felt (Tar Saturated Rag Felt)	Carey-Seal Tar Pitch	15	125	300	400
C	All	Level to 2"	X	.....	Class A	2 Plies Carey Feltex (Asphalt Saturated Rag Felt) and 2 Plies Carey Fiberock (Asphalt Impregnated Asb. Felt)	Carey Asphalt	15	100	300	400

CAREY MASTER SPECIFICATION No. 2

General Requirements Applying to All Three Types

ROOF SURFACING

The size of Slag or Gravel used for surfacing the roof shall range from 1/4 to 5/8 in. and be clean, dry and free from dirt. When applied in extreme cold weather same shall be warmed to eliminate frost. Not less than 400 lbs. of Gravel or 300 lbs. of Slag shall be used for covering each 100 sq. ft. of roof surface.

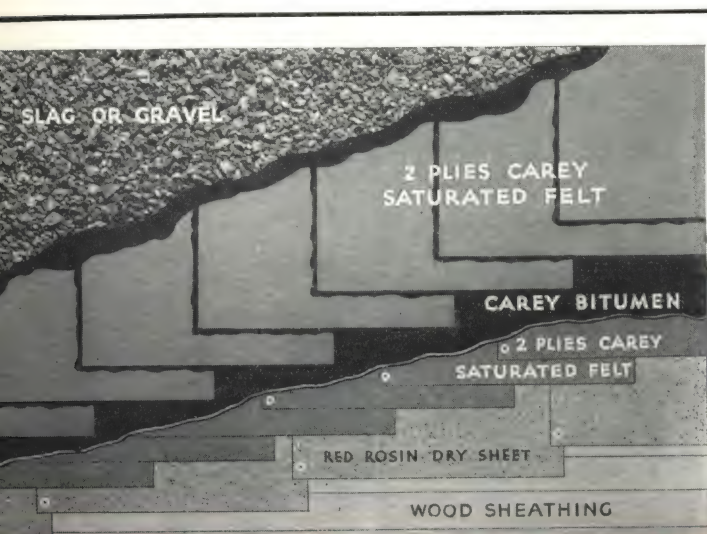
DECK TREATMENT

The roof deck over which this specification is to be applied shall be dry, free from rubbish and debris, and free from objectionable low spots and depressions. Roof must be applied during dry, favorable weather.

Note: Select one of the following paragraphs in accordance with type of deck.

Wood Decks—Before the Built-up Roofing Specification is applied the deck shall be covered with a layer of Red Rosin Sized Sheathing, weighing not less than 5 lbs. per square, same to be lapped approximately 2 ins. and secured to the deck by occasional nailing.

Nails to be used in securing the Built-up Roofing Specification in the manner described under "Material and Application Details" shall be either 1-in. roofing nails driven through flat tin caps or 1-in. "Simplex" nails.



Carey 10-year Master Built-up Roofing Specification No. 2

The construction to be followed in applying all Built-up Roofing covered by Carey Master Built-up Specification No. 2 for application over wood sheathing.

When the various types of construction under Carey Master Built-up Roofing Specification No. 2 are applied over gypsum decks, the Red Rosin Dry Sheet is omitted and the two plies of CAREY SATURATED FELT to be laid dry are applied directly over gypsum deck secured to same with nails as indicated.

Gypsum Decks—The first two sheets to be laid dry as called for in Built-up Roofing Specification shall be applied directly over the gypsum deck and secured to same as indicated under "Material and Application Details" with 1¾-in. roofing nails driven through flat tin caps or 1¾-in. "Simplex" nails.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 2 are subject

to a Carey 10-year Surety Bond when the roof is laid strictly according to Carey Specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 10-Year Surety Bond covering both material and workmanship used in the construction of this roof.

MATERIALS AND APPLICATIONS

TYPE A—SPECIFICATION NO. 2

Four plies of CAREY FELTEX (Asphalt Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 100 lbs. of CAREY ASPHALT and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 2—Type A.

The Feltex used in the construction of this roof shall be 36 ins. wide. The first two sheets shall be laid dry, lapped 19 ins., leaving 17 ins. exposed, and be secured to the deck by occasional nailing. To the surface thus provided a solid mopping of Asphalt shall be applied, into which, while hot, shall be embedded two sheets of felt, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the two top plies, so that at no point shall felt touch felt. To the top surface of this construction a flood coat of Asphalt shall be poured from a dipper and not less than 50 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. Asphalt shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 2

Four plies of CAREY-SEAL TARRED FELT (Tar Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 125 lbs. of CAREY-SEAL TAR PITCH and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 2—Type B.

The CAREY-SEAL TARRED FELT used in the construction of this roof shall be 32 ins. wide. The first two sheets shall be laid dry, lapped 17 ins., leaving 15 ins. exposed and secured to the deck by occasional nailing. To the surface thus provided a solid mopping of Tar Pitch shall be applied, into which, while hot, shall be

embedded two sheets of felt, each sheet to overlap the previous sheet 17 ins., leaving 15 ins. exposed. Solid moppings of Tar Pitch shall be applied between the two top plies of felt so that at no point shall felt touch felt. To the top surface of this construction a flood coat of Tar Pitch shall be poured from a dipper and not less than 60 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Tar Pitch, while hot, Slag or Gravel shall be embedded. Tar Pitch shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 2

Two plies of CAREY FELTEX (Asphalt Saturated Rag Felt) and two plies of CAREY FIBEROCK (Asphalt Impregnated Asbestos Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 100 lbs. of CAREY ASPHALT and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Specification No. 2—Type C.

Felts used in the construction of roof shall be 36 ins. wide. The first two plies shall be CAREY FELTEX laid dry and lapped 19 ins., leaving 17 ins. exposed, and shall be secured to the deck by occasional nailing. To the surface thus provided a solid mopping of Asphalt shall be applied, into which, while hot, shall be embedded two plies of CAREY FIBEROCK, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the two top plies of Fiberock so that at no point shall felt touch felt. To the top surface of this construction a flood coat of Asphalt shall be poured from a dipper and not less than 50 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. Asphalt shall not be heated over 400° F.

CAREY 20-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 3

20-Year Bond
4 Ply
Slag or Gravel Surface
Concrete Decks
Asphalt or Tar Construction

THREE OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. Asphalt or Tar per square	Weight, lbs. of Slag per square	Weight, lbs. of Gravel per square
			Rec.	Not Rec.							
A	All	Level to $1\frac{1}{2}''$	.....	X	Class A	4 Plies Carey Feltex (Asphalt Saturated Rag Felt)	Carey Asphalt	15	175	300	400
B	All	Level to $\frac{3}{4}''$	.....	X	Class A	4 Plies Carey-Seal Tarred Felt (Tar Saturated Rag Felt)	Carey-Seal Tar Pitch	15	190	300	400
C	All	Level to $1\frac{1}{2}''$	X	.....	Class A	2 Plies Carey Feltex (Asphalt Saturated Rag Felt) and 2 Plies Carey Fiberock (Asphalt Impregnated Asb. Felt)	Carey Asphalt	15	175	300	400

CAREY MASTER SPECIFICATION No. 3

General Requirements Applying to All Three Types

ROOF SURFACING

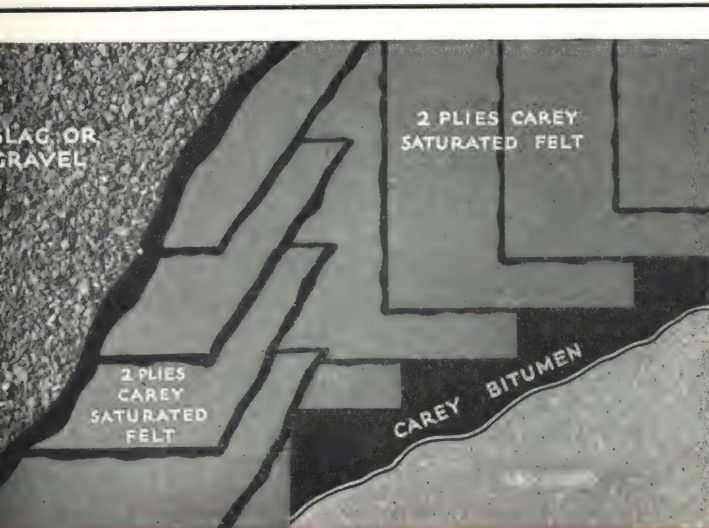
The size of Slag or Gravel used for surfacing shall range from $\frac{1}{4}$ in. to $\frac{5}{8}$ in. and be clean, dry and free from dirt. When applied in extreme cold weather same shall be warmed to eliminate frost. Not less than 400 lbs. of Gravel or 300 lbs. of Slag shall be used for covering each 100 sq. ft. of roof surface.

DECK TREATMENT

Before Built-up Roofing is applied concrete deck must be thoroughly dry with all low spots or depressions removed so that satisfactory drainage to outlets will result. Roof deck shall be free from frost, loose sand or debris and surface of deck shall also be free from laitance and scaling as the result of frozen mix.

STEEL DECKS

The steel deck shall first be covered with a solid mopping of Asphalt into which, while hot, shall be firmly embedded a layer of approved roof installation applied strictly according to architect's or manufacturer's specifications. On roof decks having an incline exceeding $\frac{3}{4}$ in. in 12 ins. insulation shall be secured in place with metal clips or bolts in addition to the bond provided by the Asphalt. (If additional layers of roof insulation are specified, joints between each subsequent layer shall be broken and layers of insulation shall be bonded together and firmly embedded into a solid mopping of hot Asphalt.)



Carey 20-year Master Built-up Roofing Specification No. 3

The construction to be followed for application of this specification directly over a Concrete Deck

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 3 are subject to a Carey 20-Year Surety Bond when the roof is laid strictly according to Carey Specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs

where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 20-year Surety Bond covering both material and workmanship used in the construction of this roof.

MATERIALS AND APPLICATIONS

TYPE A—SPECIFICATION NO. 3

Four plies of CAREY FELTEX (Asphalt Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 175 lbs. CAREY ASPHALT and 300 lbs of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 3—Type A.

The Feltex used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be mopped with a heavy coat of Asphalt, into which, while hot, two sheets of felt shall be embedded and mopped solid between the sheets with Asphalt, each sheet overlapping the previous sheet 19 ins., leaving 17 ins. exposed. The surface of this two-ply construction shall then be mopped with Asphalt, into which, while hot, two additional sheets of felt shall be applied at right angles to the first two plies, each sheet overlapping the previous sheet 19 ins., leaving 17 ins. exposed. The last two plies shall be bonded together with a solid mopping of Asphalt so that at no point shall felt touch felt. To the top surface of this construction a flood coat of Asphalt shall be poured from a dipper and not less than 50 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. CAREY ASPHALT used in constructing the roof shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 3

Four plies of CAREY-SEAL TARRED FELT (Tar Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft. and not less than 190 lbs. of CAREY-SEAL TAR PITCH and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 3—Type B.

The CAREY-SEAL TARRED FELT used in the construction of this roof shall be 32 ins. The roof surface shall first be mopped with a heavy coat of Tar Pitch, into which, while hot, two sheets of felt shall be embedded and mopped solid between the sheets with Tar Pitch, each sheet to overlap the previous sheet 17 ins., leaving 15 ins. exposed. The surface of this two-ply con-

struction shall then be mopped with Tar Pitch, into which, while hot, two additional sheets of felt shall be applied at right angles to the first two plies, each sheet overlapping the previous sheet 17 ins., leaving 15 ins. exposed. The last two plies shall be bonded together with a solid mopping of Tar Pitch so that at no point shall felt touch felt. To the top surface of this construction a flood coat of hot Tar Pitch shall be poured from a dipped and not less than 60 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Tar Pitch, while hot, Slag or Gravel shall be embedded. CAREY-SEAL TAR PITCH used in the construction of this roof shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 3

Two plies of CAREY FELTEX (Asphalt Saturated Rag Felt) and two plies of CAREY FIBEROCK (Asphalt Impregnated Asbestos Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 175 lbs. of CAREY ASPHALT and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 3—Type C.

The felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be mopped with a heavy coat of Asphalt into which, while hot, two sheets of Feltex shall be embedded and mopped solid between the sheets with Asphalt each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. The surface of this two-ply construction shall then be mopped with Asphalt, into which, while hot, two sheets of CAREY FIBEROCK shall be applied at right angles to the first two plies of Rag Felt, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. The last two plies shall be bonded together with a solid mopping of Asphalt so that at no point shall felt touch felt. To the top surface of this construction a flood coat of Asphalt shall be poured from a dipper and not less than 50 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. CAREY ASPHALT used in constructing this roof shall not be heated over 400° F.

CAREY 10-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 4

10-Year Bond
3 Ply
Slag or Gravel Surface
Concrete Decks
Asphalt or Tar Construction

THREE OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. of Mopping per square	Weight, lbs. of Slag per square	Weight, lbs. of Gravel per square
			Rec.	Not Rec.							
A	All	Level to $1\frac{1}{2}$"	.....	X	Class A	3 Plies Carey Feltex (Asphalt Saturated Rag Felt)	Carey Asphalt	15	140	300	400
B	All	Level to $\frac{3}{4}$"	.....	X	Class A	3 Plies Carey-Seal Tarred Felt (Tar Saturated Rag Felt)	Carey-Seal Tar Pitch	15	175	300	400
C	All	Level to $1\frac{1}{2}$ "	X	.....	Class A	1 Ply Carey Feltex (Asphalt Saturated Rag Felt) and 2 Plies Fiberock (Asphalt Saturated Asb. Felt)	Carey Asphalt	15	140	300	400

CAREY MASTER SPECIFICATION No. 4

General Requirements Applying to All Three Types

ROOF SURFACING

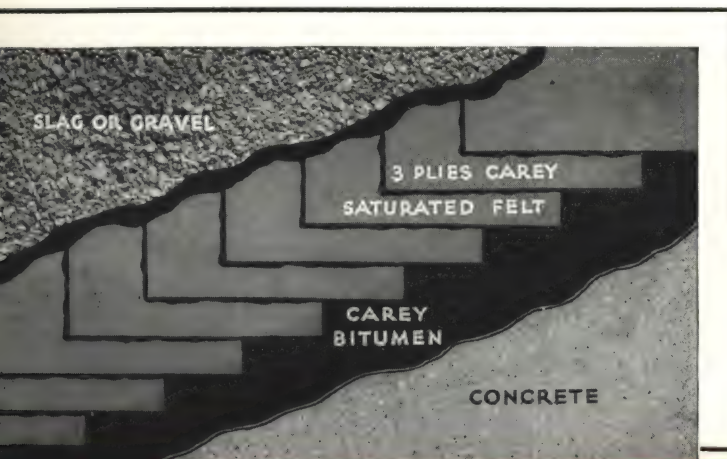
The size of Slag or Gravel used for surfacing the roof shall range from $\frac{1}{4}$ in. to $\frac{5}{8}$ in. and be clean, dry and free from dirt. When applied in extreme cold weather same shall be warmed to eliminate frost. Not less than 400 lbs. of Gravel or 300 lbs. of Slag shall be used for covering each 100 sq. ft. of roof surface.

DECK TREATMENT

Before Built-up Roofing is applied concrete deck must be thoroughly dry with all low spots or depressions removed so that satisfactory drainage to outlets will result. Roof deck shall be free from frost, loose sand or debris and surface of deck shall also be free from laitance and scaling as the result of frozen mix.

STEEL DECKS

The steel deck shall first be covered with a solid mopping of Asphalt into which, while hot, shall be firmly embedded a layer of approved roof insulation applied strictly according to architect's or manufacturer's specifications. On roof decks having an incline exceeding $\frac{3}{4}$ in. in 12 ins. insulation shall be secured in place with metal clips or bolts in addition to the bond provided by the Asphalt. (If additional layers of roof insulation are specified, joints between each subsequent layer shall be broken and layers of insulation shall be bonded together and firmly embedded into a solid mopping of hot Asphalt.)



Carey 10-year Master Built-up Roofing Specification No. 4

The construction to be followed for applying Types A and B roof construction directly over concrete deck. Types C and D roof construction are applied in two separate operations; one ply is applied first, after which the two remaining plies are applied shingle fashion over the top of the first ply, as described under "Material and Application Details"

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 4 are subject to a Carey 10-Year Surety Bond when the roof is laid strictly according to Carey Specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs

where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 10-Year Surety Bond covering both material and workmanship used in the construction of this roof.

MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 4

Three plies of CAREY FELTEX (Asphalt Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 140 lbs. CAREY ASPHALT and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 4—Type A.

The Feltex used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be mopped with a heavy coat of Asphalt, into which, while hot, shall be applied three sheets of felt mopped solid between the sheets so that at no point shall felt touch felt, each sheet to overlap the previous sheet 25 ins., leaving 11 ins. exposed. To the top surface of this construction a flood coat of Asphalt shall be poured from a dipper and not less than 50 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. CAREY ASPHALT used in the construction of the roof shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 4

Three plies of CAREY-SEAL TARRED FELT (Tar Saturated Rag Felt), each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 175 lbs. of CAREY-SEAL TAR PITCH and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 4—Type B.

The CAREY-SEAL TARRED FELT used in the construction of this roof shall be 32 ins. wide. The roof surface shall first be mopped with a heavy coat of Tar Pitch, into which, while hot, shall be applied three layers of CAREY-SEAL TARRED FELT mopped solid between the sheets so that at no point shall felt touch felt, each sheet to overlap the previous sheet 22 ins., leaving 10 ins. exposed. To the top surface of this construction a flood coat of CAREY-SEAL TAR PITCH shall be poured from a dipper and not less than 60 lbs. shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Tar Pitch, while hot, Slag or Gravel shall be embedded. CAREY-SEAL TAR PITCH used in the construction of the roof shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 4

One ply of CAREY FELTEX (Asphalt Saturated Rag Felt) and two plies of CAREY FIBEROCK (Asphalt Impregnated Asbestos Felt, each ply weighing approximately 15 lbs. per 100 sq. ft., and not less than 140 lbs. of CAREY ASPHALT and 300 lbs. of Slag or 400 lbs. of Gravel shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 4—Type C.

The felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be mopped with a heavy coat of Asphalt, into which, while hot, shall be embedded one layer of CAREY FELTEX, lapping sheets 2 ins. Over the top of the Feltex sheet shall be applied another mopping of CAREY ASPHALT, into which, while hot, shall be embedded two layers of CAREY FIBEROCK, sheets to be lapped 19 ins., leaving 17 ins. exposed—sheets to be mopped solid between the plies with hot Asphalt. To the top surface of this construction a flood coat of Asphalt shall be poured from a dipper and not less than 50 lbs. of Asphalt shall be used to cover 100 sq. ft. of roof surface. Into this top flood coat of Asphalt, while hot, Slag or Gravel shall be embedded. CAREY ASPHALT used in the construction of the roof shall not be heated over 400° F.



Cuyahoga County Court House
Cleveland, Ohio

CAREY 20-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 5

20-Year Bond
3 Ply
Mineral Surface Cap Sheet
Wood Decks
Asphalt Construction

TYPE A AND ITS SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes	Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. per square Mineral Surfaced Dur-A-Seal	Weight, lbs. per square Asphalt Mopping
A	All	$\frac{3}{4}$ " to 3"	Not rec.	Class C	3 plies of Carey Feltex (Asphalt Saturated Rag Felt) 1 Ply Mineral Surfaced Dur-A-Seal (Asphalt Saturated)	Carey Asphalt	15	75	75

CAREY MASTER SPECIFICATION No. 5 General Requirements Applying to Type A

STEEP DECK APPLICATION

When Carey Master Built-up Roofing Specification No. 5 is applied over roof decks having an incline of 1 in. in 12 ins. or greater, the cap or top sheet of CAREY MINERAL SURFACED DUR-A-SEAL shall be back-nailed approximately every 6 ins. along the underside of the end lap and approximately every 12 ins. along the underside of the side lap with 1-in. "Simplex" nails. The top or cap sheet in these instances should always be run parallel with the pitch of the roof and the sheet at the peak or ridge should extend over the ridge at least 12 ins. and be secured to the deck along the opposite slope with "Simplex" nails driven along the end of the sheet. Asphalt used in the construction of this roof when applied over decks having a pitch exceeding 1 in. in 12 ins. shall be CAREY STEEP PITCH ASPHALT.

DECK TREATMENT

The roof deck over which this specification is to be applied shall be dry, free from rubbish and debris and free from

objectionable low spots and depressions. Roof must be applied during dry, favorable weather.

Gypsum Decks—When this specification is applied over gypsum decks the length of the nails called for under "Material and Application Details" shall be $1\frac{1}{4}$ in. long instead of 1 in. long.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 5 are subject to a Carey 20-year Surety Bond when the roof is laid strictly according to Carey specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 20-year Surety Bond covering both material and workmanship used in the construction of this roof.

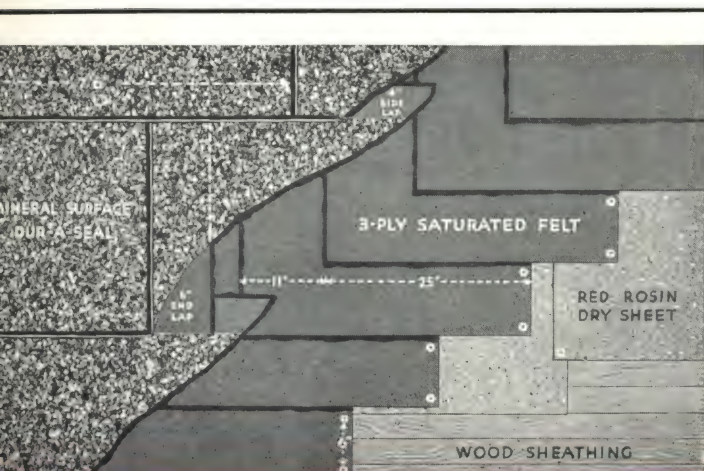
MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 5

One layer of Red Rosin Sized Sheathing Paper, weighing not less than 5 lbs. per square, three layers of 15 lb. Feltex (Asphalt Saturated Rag Felt), each sheet weighing approximately 15 lbs. per 100 sq. ft., and one sheet of CAREY MINERAL SURFACED DUR-A-SEAL (Rag Felt Base), weighing approximately 75 lbs. per 100 sq. ft., and 75 lbs. of CAREY ASPHALT

shall be used in the construction of Carey Master Built-up Roofing Specification No. 5—Type A.

The Dur-A-Seal Cap Sheet and Felt used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with a layer of Red Rosin Sized Sheathing Paper lapped approximately 2 ins. and secured to the deck by occasional nailing. Over this sheet shall then be applied three layers of 15-lb. Feltex, lapping sheets 25 ins., leaving 11 ins. exposed. Sheets shall be mopped solid between the laps with Carey Asphalt and in addition shall be nailed along the edge of the unsecured portion (back nailing method) with 1-in. nails driven through flat tin caps or 1-in. "Simplex" nails, spaced along the laps approximately every 3 in. To the surface of this three-ply construction a solid mopping of CAREY ASPHALT shall be applied, into which, while hot, shall be embedded the sheet of Mineral Surfaced Dur-A-Seal (Rag Felt Base), sheets to be applied in approximately 8-ft. lengths and lapped 4 ins. along the longitudinal seams and 6 ins. at the end seams, laps to be sealed with solid moppings of hot Asphalt. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.



Carey 20-year Master Built-up Roofing Specification No. 5

The construction to be followed in applying all types of Built-up Roofing covered by Carey Master Built-up Roofing Specification No. 5 for application directly over wood decks

CAREY 10-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 6

10-Year Bond
2 Ply
Mineral Surface Cap Sheet
Wood Decks
Asphalt Construction

TYPE A AND ITS SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. per square Mineral Surf. Dur-A-Seal	Weight, lbs. per square Asphalt Mopping
			Rec.	Not Rec.						
A	All	¾" to 3"	.....	X	Class C	2 Plies Carey Feltex (Asphalt Saturated Rag Felt) 1 Ply Mineral Surface Dur-A-Seal (Asphalt Saturated)	Carey Asphalt	15	75	75

CAREY MASTER SPECIFICATION No. 6 General Requirements Applying to Type A

STEEP DECK APPLICATION

When Carey Master Built-up Roofing Specification No. 6 is applied over roof decks having an incline of 1 in. in 12 ins. or greater, the cap or top sheet of CAREY MINERAL SURFACED DUR-A-SEAL shall be back nailed approximately every 6 ins. along the underside of the end lap and approximately every 12 ins. along the underside of the side lap with 1-in. "Simplex" nails. The top or cap sheet in these instances should always be run parallel with the pitch of the roof and the sheet at the peak or ridge should extend over the ridge at least 12 ins. and be secured to the deck along the opposite slope with "Simplex" nails driven along the end of the sheet. Asphalt used in the construction of this roof when applied over decks having a pitch exceeding 1 in. in 12 ins. shall be CAREY STEEP PITCH ASPHALT.

DECK TREATMENT

The roof deck over which this specification is to be applied shall be dry, free from rubbish and debris and free from

objectionable low spots and depressions. Roof must be applied during dry, favorable weather.

Gypsum Decks—When this specification is applied over gypsum decks the length of the nails called for under "Material and Application Details" shall be 1¾ in. long instead of 1 in. long.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 6 are subject to a Carey 10-year Surety Bond when the roof is laid strictly according to Carey Specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 10-year Surety Bond covering both material and workmanship used in the construction of this roof.

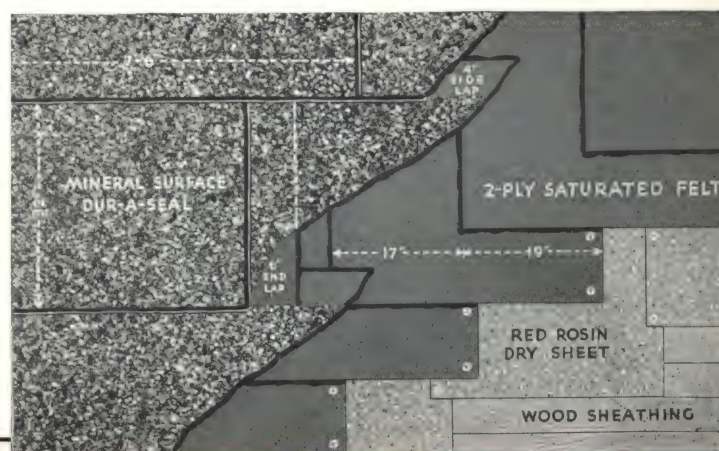
MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 6

One layer of Red Rosin Sized Sheathing Paper, weighing not less than 5 lbs. per square, two layers of 15-lb. Feltex (Asphalt Saturated Rag Felt), each sheet weighing approximately 15 lbs. per 100 sq. ft., and one sheet of CAREY MINERAL SURFACED DUR-A-SEAL (Rag Felt Base), weighing approximately 75 lbs. per 100 sq. ft., and 50 lbs. of Carey Asphalt shall be used in the construction of Carey Master Built-up Roofing Specification No. 6—Type A.

The Dur-A-Seal Cap Sheet and Felt used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with a layer of Red Rosin Sized Sheathing Paper lapped approximately 2 ins. and secured to the deck by occasional nailing. Over this sheet shall then be applied two layers of 15-lb. Feltex, sheets lapped 19 ins., leaving 17 ins. exposed. Sheets shall be mopped solid between the laps with CAREY ASPHALT and in addition shall be nailed along the edge of the unsecured portion (back nailing method) with 1-in. nails driven through flat tin caps or 1-in. "Simplex" nails, spaced along the laps approximately every 3 ins. To the surface of this two-ply construction a mopping of CAREY ASPHALT

shall be applied, into which, while hot, shall be embedded the sheet of Mineral Surfaced Dur-A-Seal (Rag Felt Base), sheets to be applied in approximately 8-ft. lengths and lapped 4 ins. along the longitudinal seams and 6 ins. at the end seams, laps to be sealed with solid moppings of hot Asphalt. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.



Carey 10-year Master Built-up Roofing Specification No. 6

The construction to be followed in applying all types of Built-up Roofing covered by Carey Master Built-up Roofing Specification No. 6 for application directly over Wood Decks

CAREY 20-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 7

20-Year Bond
3 Ply
Mineral Surface Cap Sheet
Concrete Decks
Asphalt Construction

TYPE A AND ITS SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. per square Mineral Surf. Dur-A-Seal	Weight, lbs. per square Asphalt Mopping
			Rec.	Not Rec.						
A	All	$\frac{3}{4}$ " to $1\frac{1}{2}$"	.....	X	Class C	3 Plies Carey Feltex (Asphalt Saturated Rag Felt) 1 Ply Mineral Surf. Dur-A-Seal (Asphalt Saturated)	Carey Asphalt	15	75	75

CAREY MASTER SPECIFICATION No. 7 General Requirements Applying to Type A

DECK TREATMENT

Before Built-up Roofing is applied concrete deck must be thoroughly dry with all low spots or depressions removed so that satisfactory drainage to outlets will result. Roof deck shall be free from frost, loose sand or debris and surface of deck shall also be free from laitance and scaling as the result of frozen mix.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up

Roofing Specification No. 7 are subject to a Carey 20-year Surety Bond when the roof is laid strictly according to Carey specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 20-year Surety Bond covering both material and workmanship used in the construction of this roof.

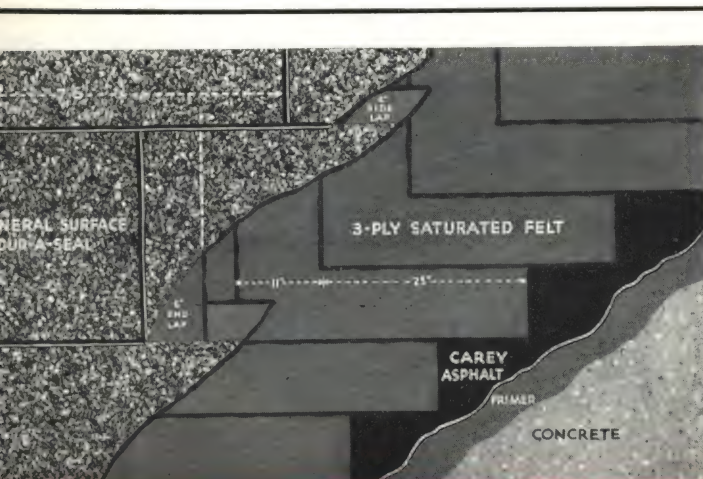
MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 7

One gallon of Asphalt Primer, three layers of 15-lb. Feltex (Asphalt Saturated Rag Felt), each sheet weighing approximately 15 lbs. per 100 sq. ft., and one sheet of CAREY MINERAL SURFACED DUR-A-SEAL (Rag Felt Base), weighing approximately 75 lbs. per 100 sq. ft., and 115 lbs. of CAREY ASPHALT

shall be used in the construction of Carey Master Built-up Roofing Specification No. 7—Type A.

The Dur-A-Seal Cap Sheet and Felt used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt Primer to which surface shall be applied a solid mopping of Asphalt into which, while hot, shall be embedded three layers of 15-lb. Feltex, lapping sheets 25 ins., leaving 11 ins. exposed. Sheets shall be mopped solid between the plies with CAREY ASPHALT. The surface of this three-ply construction shall then be mopped with a solid mopping of CAREY ASPHALT into which, while hot, shall be embedded the sheet of Mineral Surfaced Dur-A-Seal (Rag Felt Base), sheets to be applied in approximately 8-ft. lengths and lapped 4 ins. along the longitudinal seams and 6 ins. at the end seams. Laps to be sealed with solid moppings of Asphalt. The Asphalt used in the construction of this roof shall not be heated over 400° F.



Carey 20-year Master Built-up Roofing Specification No. 7

The construction to be followed in applying all types of Built-up Roofing covered by Carey Master Built-up Roofing Specification No. 7 for application directly over Concrete Decks

CAREY 10-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 8

10-Year Bond
2 Ply
Mineral Surface Cap Sheet
Concrete Decks
Asphalt Construction

TYPE A AND ITS SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Type of Mopping	Weight, lbs. per ply of Felt per square	Weight, lbs. per square Mineral Surf. Dur-A-Seal	Weight, lbs. per square Asphalt Mopping
			Rec.	Not Rec.						
A	All	$\frac{3}{4}$ " to $1\frac{1}{2}$"	.....	X	Class C	2 Plies Carey Feltex (Asphalt Saturated Rag Felt) 1 Ply Mineral Surface Dur-A-Seal (Asphalt Saturated)	Carey Asphalt	15	75	75

CAREY MASTER SPECIFICATION No. 8 General Requirements Applying to Type A

DECK TREATMENT

Before Built-up Roofing is applied concrete must be thoroughly dry with all low spots or depressions removed so that satisfactory drainage to outlets will result. Roof deck shall be free from frost, loose sand or debris and surface of deck shall also be free from laitance and scaling as the result of frozen mix.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up

Roofing Specification No. 8 are subject to 10-year Surety Bond when the roof is laid strictly according to Carey specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY's 10-year Surety Bond covering both material and workmanship used in the construction of this roof.

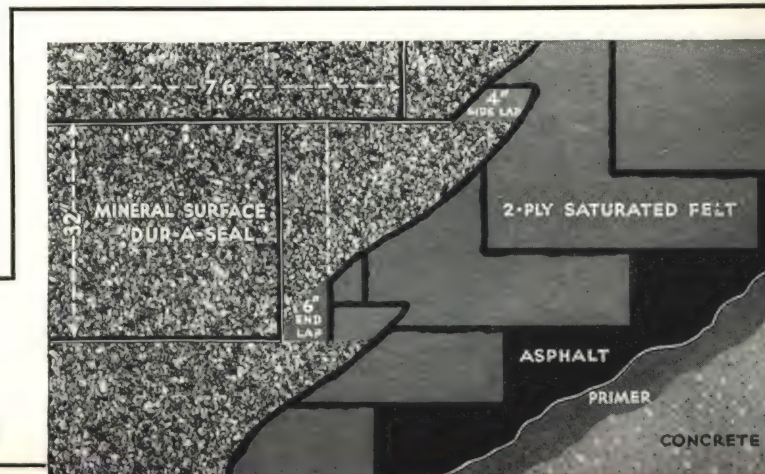
MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 8

One gallon of Asphalt Primer, two layers of 15-lb. Feltex (Asphalt Saturated Rag Felt), each sheet weighing approximately 15 lbs. per 100 sq. ft., and one sheet of CAREY MINERAL SURFACED DUR-A-SEAL (Rag Felt Base), weighing approximately 75 lbs. per 100 sq. ft., and 90 lbs. of CAREY ASPHALT shall be used in the construction of Carey Master Built-up Roofing Specification No. 8—Type A.

The Dur-A-Seal Cap Sheet and Felt used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt Primer to which surface shall be applied a solid mopping of Asphalt into which, while hot, shall be embedded two layers of 15-lb. Feltex, lapping sheets 19 ins., leaving 17 ins. exposed. Sheets shall be mopped solid between the plies with CAREY ASPHALT. The surface of this two-ply construction shall then be mopped with a solid mopping of

CAREY ASPHALT into which, while hot, shall be embedded the sheet of Mineral Surfaced Dur-A-Seal (Rag Felt Base), sheets to be applied in approximately 8-ft. lengths and lapped 4 ins. along the longitudinal seams and 6 ins. at the end seams. Laps to be sealed with solid moppings of Asphalt. The Asphalt used in the construction of this roof shall not be heated over 400° F.



Carey 10-year Master Built-up Roofing Specification No. 8

The construction to be followed in applying all types of Built-up Roofing covered by Carey Master Built-up Roofing Specification No. 8 for application directly over Concrete Decks

CAREY 20-YEAR

MASTER BUILT-UP ROOFING

SPECIFICATION NO. 9

20-Year Bond
3 Ply
Asphalt Surface
Wood or Gypsum Decks
Asphalt Construction

TWO OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Section of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Weight, lbs. per ply Base Sheet	Weight, lbs. per ply Cap Sheets per sq.	Type Mopping	Weight per square Asphalt Mopping
			Rec.	Not Rec.						
A	All	$\frac{3}{4}$ " to 2"	X	.....	Class A	1 Layer Carey Fiberock Base Sheet (Asphalt Impregnated Asb.) 3 plies Carey Fiberock	60	20	Carey Asphalt	100
B	North and East	$\frac{3}{4}$ " to 2"	.....	X	Class C	1 Layer Feltex Base Sheet (Asphalt Sat. Rag Felt) 3 plies Feltex (Asphalt Sat. Rag Felt)	30	15	Carey Asphalt	100
C	All	$\frac{3}{4}$ " to 2"	X	.....	Class C	1 Layer Feltex Base Sheet (Asphalt Sat. Rag Felt) 3 plies Fiberock (Asphalt Sat. Asbestos Felt)	45	20	Carey Asphalt	100

CAREY MASTER SPECIFICATION No. 9

General Requirements Applying to Both Types

DECK TREATMENT

The roof deck over which this specification is to be applied shall be dry, free from rubbish and debris, and free from objectionable low spots and depressions. Roof must be applied during dry, favorable weather.

Gypsum Decks—When this specification is applied over Gypsum Decks, nails called for under "Material and Application Details," shall be 1 $\frac{3}{4}$ ins. long instead of 1 in. long.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 9 are subject to a Carey 20-year Surety Bond when the roof is laid strictly according to Carey specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 20-Year Surety Bond covering both material and workmanship used in the construction of this roof.

MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 9

One layer of CAREY FIBEROCK ASBESTOS BASE SHEET (Asphalt Impregnated and Coated Asbestos Felt) weighing approximately 60 lbs. per 100 sq. ft., and three plies of CAREY 20-LB. FIBEROCK (Asbestos Felt Impregnated and Coated on one side with Asphalt) each sheet weighing approximately 20 lbs. per 100 sq. ft., and 100 lbs. of CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 9—Type A.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with the 60-lb. Fiberock Base Sheet, lapping all sheets not less than 2 ins. and secured to the deck with 1-in. nails driven through flat tin caps or 1-in. "Simplex" nails, spacing nails along the laps approximately every 4 ins. In addition two rows of nails shall be run parallel to the laps through the center of the sheets, nailing approximately 8 ins. apart and 12 ins. from either edge. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded three sheets of 20-lb. Fiberock, Asphalt coated side down, each sheet to overlap previous sheet 25 ins., leaving 11 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of hot CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 9

One layer of CAREY FELTEX BASE SHEET (Asphalt Saturated and Coated Rag Felt) weighing approximately 45 lbs. per 100 sq. ft., and three plies

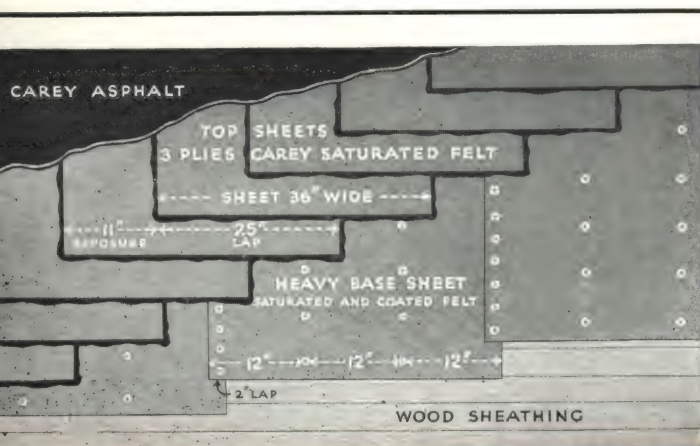
of 15-lb. Feltex (Asphalt Saturated Rag Felt) each sheet weighing approximately 15 lbs. per 100 sq. ft., and 100 lbs. of CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 9—Type B.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with the 60-lb. Feltex Base Sheet, lapping all sheets not less than 2 ins. and secured to the deck with 1-in. nails driven through flat tin caps or 1-in. "Simplex" nails, spacing nails along the laps approximately every 4 ins. In addition two rows of nails shall be run parallel to the laps through the center of the sheets, nailing approximately 8 ins. apart and 12 ins. from either edge. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded three sheets of 15-lb. Feltex, each sheet to overlap the previous sheet 25 ins., leaving 11 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of hot CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 9

One layer of CAREY FELTEX BASE SHEET (Asphalt Saturated and Coated Rag Felt), weighing approximately 45 lbs. per 100 sq. ft., and three plies of 20-lb. Fiberock (Asbestos Felt Impregnated and Coated on One Side with Asphalt), each sheet weighing approximately 20 lbs. per 100 sq. ft., and 100 lbs. of CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-Up Roofing Specification No. 9—Type C.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with the 45-lb. Feltex Base Sheet, mopping this sheet not less than 2 ins. and securing it to the deck with 1-in. nails driven through flat tin caps or 1-in. "Simplex" nails, spacing nails along the laps, approximately every 4 ins. In addition, two rows of nails shall be run parallel to the laps through the center of the sheet, nailing approximately 8 ins. apart and 12 ins. from either edge. To the surface thus provided, a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded three sheets of 20-lb. Fiberock, each sheet to overlap the previous sheet 25 ins., leaving 11 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of hot CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.



Carey 20-year Master Built-up Roofing Specification No. 9

The construction to be followed in applying both types of Built-up Roofs covered by Carey 20-year Master Built-up Roofing Specification No. 9 for application over wood or gypsum decks.

CAREY 10-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 10

10-Year Bond
2 Ply
Asphalt Surface
Wood or Gypsum Decks
Asphalt Construction

THREE OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Weight, lbs. Base Sheet per square	Weight, lbs. per ply Cap Sheet per square	Type Mopping	Weight per square Asphalt Mopping
			Rec.	Not Rec.						
A	All	$\frac{3}{4}$ " to 2"	X	.....	Class A	1 layer Carey Fiberock Base Sheet (Asphalt Impregnated Asb.) 2 plies Carey Fiberock (Asphalt Impregnated Asb.)	45	20	Carey Asphalt	75
B	North and East	$\frac{3}{4}$ " to 2"	.....	X	Class C	1 layer Feltex Base Sheet (Asphalt Sat. Rag Felt) 2 plies Carey Feltex (Asphalt Sat. Rag Felt)	30	15	Carey Asphalt	75
C	North and East	$\frac{3}{4}$ " to 2"	X	.....	Class C	1 layer Feltex Base Sheet (Asphalt Sat. Rag Felt) 2 plies Carey Fiberock (Asphalt Impregnated Asb.)	30	20	Carey Asphalt	75

CAREY MASTER SPECIFICATION No. 10

General Requirements Applying to All Three Types

DECK TREATMENT

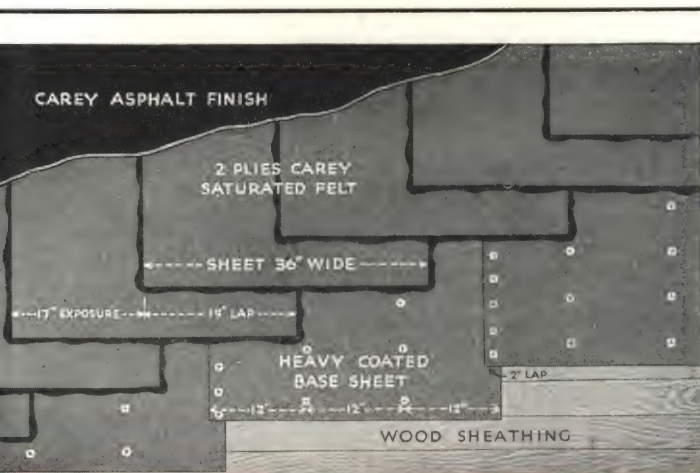
The roof deck over which this specification is to be applied shall be dry, free from rubbish and debris and free from objectionable low spots and depressions. Roof must be applied during dry, favorable weather.

Gypsum Decks—When this specification is applied over gypsum decks the length of the nails called for under "Material and Application Details," shall be $1\frac{3}{4}$ ins. long instead of 1 in. long.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 10 are subject to a Carey 10-year Surety Bond when the roof is laid strictly according to Carey Specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 10-Year Surety Bond covering both material and workmanship used in the construction of this roof.



Carey 10-year Master Built-up Roofing Specification No. 10

The construction to be followed in applying all three types of Built-Up Roofs covered by Carey 10-year Master Built-Up Roofing Specification No. 10 for application over wood or gypsum decks

MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 10

One layer of CAREY 45-LB. FIBEROCK ASBESTOS BASE SHEET (Asphalt Impregnated and Coated Asbestos Felt), weighing approximately 45 lbs. per 108 sq. ft., and two plies of CAREY 20-LB. FIBEROCK (Asbestos Felt Impregnated and Coated on one side with Asphalt), each sheet weighing approximately 20 lbs. per 100 sq. ft., and 75 lbs. of CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 10—Type A.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with the 45-lb. Fiberock Base Sheet, lapping all sheets not less than 2 ins. and secured to the deck with 1-in. nails driven through flat tin caps or 1-in. "Simplex" nails, spacing nails along the laps approximately every 4 ins. In addition two rows of nails shall be run parallel to the laps through the center of the sheets, nailing approximately 8 ins. apart and 12 ins. from either edge. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied, into which, while hot, shall be embedded two sheets of CAREY 20-LB. FIBEROCK, Asphalt coated side down, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of hot CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 10

One layer of CAREY 30-LB. FELTEX BASE SHEET (Asphalt Saturated Rag Felt), weighing approximately 30 lbs. per 100 sq. ft., and two plies of CAREY 15-LB. FELTEX (Asphalt Saturated Rag Felt), each sheet weighing approximately 15 lbs. per 100 sq. ft., and 75 lbs. CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 10—Type B.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with the 30-lb. Feltex Base Sheet, lapping all sheets not less than 2 ins. and secured to the deck with 1-in. nails driven through flat tin

caps or 1-in. "Simplex" nails, spacing nails along the laps approximately every 4 ins. In addition two rows of nails shall be run parallel to the laps through the center of the sheets, nailing approximately 8 ins. apart and 12 ins. from either edge. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded two sheets of 15-lb. Feltex, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of hot CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 10

One layer of CAREY 30-LB. FELTEX BASE SHEET (Asphalt Saturated Rag Felt), weighing approximately 30 lbs. per 100 sq. ft., and two plies of CAREY 20-LB. FIBEROCK (Asbestos Felt Impregnated and Coated one side with Asphalt), each sheet weighing approximately 20 lbs. per sq. ft., and 75 lbs. of CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 10—Type C.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be covered with the 30-lb. Feltex Base Sheet, lapping all sheets not less than 2 ins. and secured to the deck with 1-in. nails driven through flat tin caps or 1-in. "Simplex" nails, spacing nails along the laps approximately every 4 ins. In addition two rows of nails shall be run parallel to the laps through the center of the sheets, nailed approximately 8 ins. apart and 12 ins. from either edge. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied, into which, while hot, shall be embedded two sheets of 20-lb. Fiberock, Asphalt coated side down, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of hot CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.



The DeVilbiss Manufacturing Company

Toledo, Ohio

CAREY 20-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 11

20-Year Bond
3 Ply
Asphalt Surface
Concrete Decks
Asphalt Construction

THREE OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Weight, lbs. Base Sheet per square	Weight, lbs. per ply Cap Sheets per square	Type Mopping	Weight per square Asphalt Mopping	Asphalt Primer
			Rec.	Not Rec.							
A	All	$\frac{3}{4}$ " to $1\frac{1}{2}$ "	X	.....	Class A	1 layer Carey Fiberock Base Sheet (Asphalt Impregnated Asb.) 2 plies Carey Fiberock (Asphalt Impregnated Asb.)	60	20	Carey Asphalt	115	1 Gal.
B	North and East	$\frac{3}{4}$ " to $1\frac{1}{2}$"	.....	X	Class C	1 layer Carey Feltex Base Sheet (Asphalt Sat. Rag Felt) 3 plies Carey Feltex (Asphalt Sat. Rag Felt)	45	15	Carey Asphalt	125	1 Gal.
C	All	$\frac{3}{4}$ " to $1\frac{1}{2}$"	.....	X	Class A	4 plies Carey Fiberock (Asphalt Impregnated Asb. Felt)	.....	20	Carey Asphalt	125	1 Gal.

CAREY MASTER SPECIFICATION No. 11

General Requirements Applying to All Three Types

DECK TREATMENT

Before Built-up Roofing is applied concrete deck must be thoroughly dry with all low spots or depressions removed so that satisfactory drainage to outlets will result. Roof deck shall be free from frost, loose sand or debris and surface of deck shall also be free from laitance and scaling as the result of frozen mix.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 11 are subject to a Carey 20-year Surety Bond when the roof is laid strictly according to Carey specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 20-Year Surety Bond covering both material and workmanship used in the construction of this roof.

MATERIALS AND APPLICATIONS

TYPE A—SPECIFICATION NO. 11

One gallon Asphalt Primer, a base sheet of CAREY FIBEROCK (Asphalt Impregnated and Coated Asbestos Felt), weighing approximately 60 lbs. per 100 sq. ft., two plies of CAREY 20-LB. FIBEROCK (Asbestos Felt Impregnated and Coated on one side with Asphalt), each sheet weighing approximately 20 lbs. per 100 sq. ft., and 110 lbs. of CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 11—Type A.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt Primer to which surface shall be applied a heavy coat of Asphalt into which, while hot, shall be laid the CAREY 60-LB. FIBEROCK BASE SHEET, lapping all sheets not less than 2 ins. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded two sheets of 20-lb. Fiberock, Asphalt coated side down, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 11

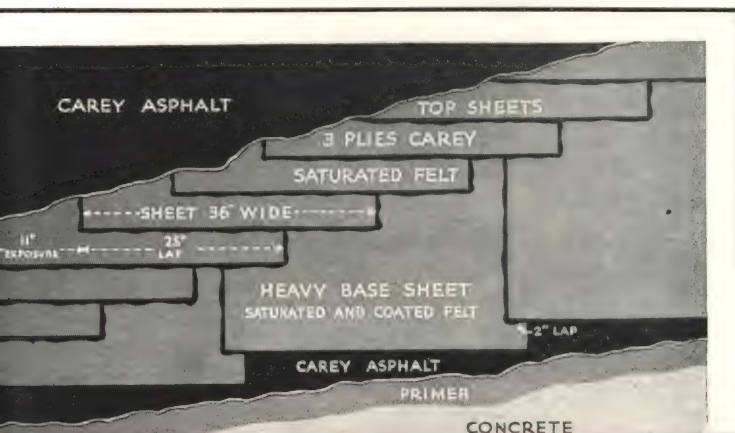
One gallon Asphalt Primer, a base sheet of CAREY FELTEX (Asphalt Saturated and Coated Rag Felt), weighing approximately 45 lbs. per 100 sq. ft. and three plies of CAREY 15-LB. FELTEX (Asphalt Saturated Rag Felt), each sheet weighing approximately 15 lbs. per 100 sq. ft., and 110 lbs. CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 11—Type B.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt Primer to which surface shall be applied a heavy coat of Asphalt into which, while hot, shall be laid the CAREY 60-LB. FELTEX Base Sheet, lapping all sheets not less than 2 ins. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded three sheets of felt, each sheet to overlap the previous sheet 25 ins., leaving 11 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of CAREY ASPHALT. CAREY ASPHALT used in constructing this roof shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 11

One Gallon Asphalt Primer, and four plies Carey 20-lb. FIBEROCK ASBESTOS FELT Impregnated and coated on one side with Asphalt, each sheet weighing approximately 20 lbs. per 100 sq. ft. and 135 lbs. CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-Up Roofing Specification No. 11—Type C.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt Primer to which surface shall be applied a heavy coat of asphalt into which, while hot shall be embedded four sheets of felt, each sheet to overlap the previous sheet 27 ins. leaving 9 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of Carey Asphalt. Carey Asphalt used in constructing this roof shall not be heated over 400° F.



Carey 20-year Master Built-up Roofing Specification No. 11

The construction to be followed in applying both types of Built-Up Roofs covered by Carey 20-year Master Built-Up Roofing Specification No. 11 for application over concrete decks

CAREY 20-YEAR MASTER BUILT-UP ROOFING SPECIFICATION NO. 12

20-Year Bond
2 Ply
Asphalt Surface
Concrete Decks
Asphalt Construction

THREE OPTIONAL TYPES AND SERVICE ADAPTABILITY

Type	Sections of U. S.	Deck Slope, inches to one foot	Acid Fumes		Underwriters Laboratories Rating	Number of Layers and Type of Felt	Weight, lbs. Base Sheet per square	Weight, lbs. per ply Cap Sheet per square	Type Mopping	Weight per square Asphalt Mopping	Asphalt Primer
			Rec.	Not Rec.							
A	All	$\frac{3}{4}"$ to $1\frac{1}{2}"$	X	.....	Class A	1 layer Carey Fiberock Base Sheet (Asphalt Impregnated Asb.) 2 plies Carey Fiberock (Asphalt Impregnated Asb.)	45	20	Carey Asphalt	115	1 Gal.
B	North and East	$\frac{3}{4}"$ to $1\frac{1}{2}"$	.....	X	Class B	1 layer Carey Feltex Base Sheet (Asphalt Sat. Rag Felt) 2 plies Carey Feltex (Asphalt Sat. Rag Felt)	30	15	Carey Asphalt	115	1 Gal.
C	North and East	$\frac{3}{4}"$ to $1\frac{1}{2}"$	X	.....	Class C	1 layer Carey Feltex Base Sheet (Asphalt Sat. Rag Felt) 2 plies Carey Fiberock (Asphalt Impregnated Asb.)	30	20	Carey Asphalt	115	1 Gal.

CAREY MASTER SPECIFICATION No. 12

General Requirements Applying to All Three Types

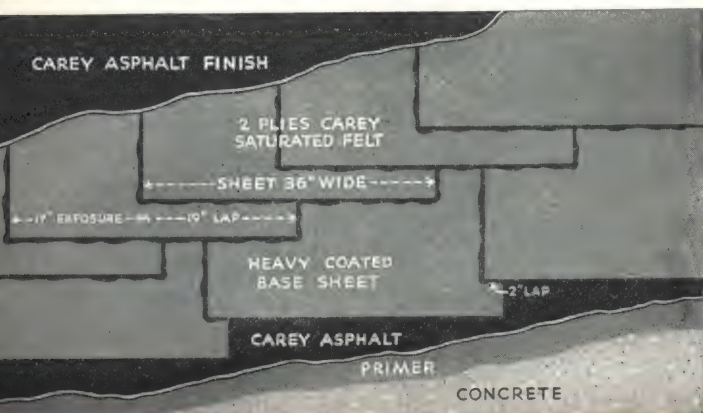
DECK TREATMENT

Before Built-up Roofing is applied concrete deck must be thoroughly dry, with all low spots or depressions removed so that satisfactory drainage to outlets will result. Roof deck shall be free from frost, loose sand or debris and surface of deck shall also be free from laitance and scaling as the result of frozen mix.

REQUIREMENTS FOR BOND

Note: All types of roofs under Carey Master Built-up Roofing Specification No. 12 are subject to a Carey 10-year Surety Bond when the roof is laid strictly according to Carey specifications by roofing contractor approved by THE PHILIP CAREY COMPANY. Bonds will be furnished on jobs of 25 squares or over where Carey roof inspection service is available.

Bond Clause—The roofing contractor shall furnish THE PHILIP CAREY MANUFACTURING COMPANY'S 10-year Surety Bond covering both material and workmanship used in the construction of this roof.



Carey 10-year Master Built-up Roofing Specification No. 12

The construction to be followed in applying all three types of Built-Up Roofs covered by Carey 10-year Master Built-Up Roofing Specification No. 12 for application over concrete decks

MATERIALS AND APPLICATION

TYPE A—SPECIFICATION NO. 12

One gallon Asphalt Primer, a base sheet of CAREY 45-LB. FIBEROCK (Asphalt Impregnated and Coated Asbestos Felt), weighing approximately 45 lbs. per 108 sq. ft., two plies of CAREY 20-LB. FIBEROCK (Asbestos Felt Impregnated and Coated on one side with Asphalt), each sheet weighing approximately 20 lbs. per 100 sq. ft. and 115 lbs. of CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 12—Type A.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt Primer to which surface shall be applied a heavy coat of Asphalt into which, while hot, shall be laid the CAREY 45-LB. FIBEROCK Base Sheet, lapping all sheets not less than 2 ins. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded two sheets of 20-lb. Fiberock, Asphalt coated side down, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of CAREY ASPHALT. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.

TYPE B—SPECIFICATION NO. 12

One gallon Asphalt Primer, a base sheet of CAREY FELTEX (Asphalt Saturated Rag Felt), weighing approximately 30 lbs. per 100 sq. ft., and two plies of CAREY 15-LB. FELTEX (Asphalt Saturated Rag Felt), each sheet weighing approximately 15 lbs. per 100 sq. ft., and 115 lbs. CAREY ASPHALT shall be used in constructing 100 sq. ft. of Carey Master Built-up Roofing Specification No. 12—Type B.

All felts used in the construction of this roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt

Primer to which surface shall be applied a heavy coat of Asphalt into which, while hot, shall be laid the CAREY 30-LB. FELTEX Base Sheet, lapping all sheets not less than 2 ins. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded two sheets of felt, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of CAREY ASPHALT. CAREY ASPHALT used in constructing this roof shall not be heated over 400° F.

TYPE C—SPECIFICATION NO. 12

One gallon of Asphalt Primer, a base sheet of CAREY FELTEX (Asphalt Saturated Rag Felt), weighing approximately 30 lbs. per 100 sq. ft., and two plies of CAREY 20-LB. FIBEROCK (Asbestos Felt Impregnated and Coated on one side with Asphalt), each sheet weighing approximately 20 lbs. per 100 sq. ft., and 115 lbs. of CAREY ASPHALT shall be used in the construction of 100 sq. ft. of Carey Master Built-up Roofing Specification No. 12—Type C.

All felts used in the construction of the roof shall be 36 ins. wide. The roof surface shall first be primed with Asphalt Primer, to which surface shall be applied a heavy coat of Asphalt into which, while hot, shall be embedded the CAREY 30-LB. FELTEX Base Sheet, lapping all sheets not less than 2 ins. To the surface thus provided a solid mopping of CAREY ASPHALT shall be applied into which, while hot, shall be embedded two sheets of 20-lb. Fiberock, Asphalt coated side down, each sheet to overlap the previous sheet 19 ins., leaving 17 ins. exposed. Solid moppings of Asphalt shall be applied between the sheets so that at no point shall felt touch felt. The roof surface shall be finished with a uniform coating of Asphalt. CAREY ASPHALT used in the construction of this roof shall not be heated over 400° F.



Armory Drill Shed, 33rd and Lancaster Ave.

Philadelphia, Penna.

CAREY SPECIFICATIONS

FOR APPLICATION OF

ROOF INSULATION

Over

Wood, Concrete &

Steel Decks

The following Carey Master Built-up Roofing Specifications are especially adapted for application over insulated wood, concrete and steel decks (asphalt primer called for in roofing specifications to be omitted unless called for in the insulation specification):

(1) 20-year Slag or Gravel surfaced: All types called for under Carey Master Built-up Roofing Specification No. 3.

(2) 10-year Slag or Gravel surfaced: All types called for under Carey Master Built-up Roofing Specification No. 4.

(3) 20-year Dur-A-Seal Mineral Surfaced: All types called for under Carey Master Built-up Roofing Specification No. 7.

(4) 10-year Dur-A-Seal Mineral Surfaced: All types called for under Carey Master Built-up Roofing Specification No. 8.

(5) 20-year smooth Asphalt finished: All types called for under Carey Master Built-up Roofing Specification No. 11.

(6) 10-year smooth Asphalt finished: All types called for under Carey Master Built-up Roofing Specification No. 12.

GENERAL REQUIREMENTS

When smooth top Asphalt finished roofs, Dur-A-Seal Mineral surfaced roofs or any other type roof not surfaced with Slag or Gravel, is specified for application over insulated poured or pre-cast concrete decks, the deck shall be primed with a coat of cold Asphalt Primer, using approximately one gallon per 100 sq. ft., before the first mopping of Asphalt, which is to bond the insulation in place, is applied.

Bitumen required for application of roof insulation shall be in addition to the total quantity specified for use in applying the built-up roofing specification.

The roof deck shall be acceptable to the roofing contractor

and shall be thoroughly clean, dry and otherwise conform to the accepted standard of deck construction providing a suitable surface over which to apply a built-up roof.

At the end of each day's work the exposed edges of the insulation shall be protected from the elements with a strip of 15-lb. Saturated Felt bonded to the deck and extended over exposed edges of insulation with a mopping of hot Bitumen.

The application of the built-up roof shall follow closely the application of the insulation and at no time shall the built-up roof be applied when the surface of the insulation is moist or damp.

SPECIAL CONSTRUCTION RECOMMENDATIONS

The constructions recommended in this note, while not a part of this insulation specification, are suggested for use on jobs where improved construction is desired at small additional cost.

(A) Concrete Decks—A mopping of hot Bitumen and a layer of 15-lb. Saturated Felt applied to the deck before insulation is applied provides a better base and a dryer bonding surface for the insulation than otherwise would be provided if insulation was applied directly over the concrete.

(B) Water Stops—When insulation is applied to all types of decks it may be divided into sections by means of water stops or seal courses consisting of strips of 15-lb. Saturated Felt approximately 10½ ins. wide. One half the width of a Saturated Felt strip is bonded to the deck with hot Bitumen, the other half is extended over the edges and on to the surface of the insulation and secured to same with a mopping of hot Bitumen.

These water stops or seal courses should be placed at intervals of approximately 30 feet in both directions and at all outside edges of insulation, thereby preventing the danger of water from possible leaks traveling from one section of the insulation to another.

SPECIFICATION FOR INSULATED WOOD DECKS

The wood deck shall first be covered with two layers of Red Rosin Sized Sheathing Paper weighing approximately 5 lbs. per 100 sq. ft. Sheets shall be lapped approximately 19 ins. at the side and end laps and secured to the deck by occasional nailing. Over this surface a layer of approved insulation shall be applied strictly according to architect's or manufacturer's specifications and secured to the deck with large headed roofing nails. (If additional layers of roof insulation are specified, joints between each subsequent layer shall be broken and layers of insulation shall be bonded together and firmly embedded into a solid mopping of hot Bitumen.) Over the surface of the applied insulation the built-up roof, type as specified, shall be applied.

All Bitumen used in applying insulation shall be of the same type as is used in the construction of the built-up roof.

SPECIFICATION FOR INSULATED CONCRETE DECKS

The concrete deck shall first be covered with a solid mopping of hot Bitumen. (When Asphalt roofs are specified which are not to be surfaced with Slag or Gravel the deck shall be primed before the mopping of hot Asphalt is applied.) Into the solid mopping of Bitumen, while hot, shall be firmly embedded a layer of approved roof insulation applied strictly according to architect's or manufacturer's specifications. (If additional layers of roof insulation are specified, joints between each subsequent layer shall be broken and layers of insulation shall be bonded together and firmly embedded into a solid mopping of hot Bitumen.) Over the surface of the applied insulation the built-up roof, type as specified, shall be applied.

All Bitumen used in applying insulation shall be of the same type as is used in the construction of the built-up roof.

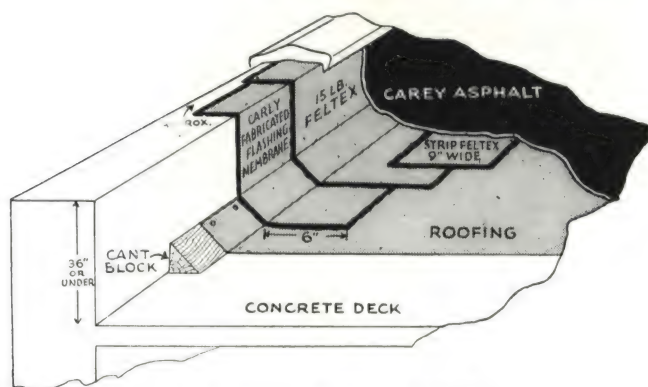
SPECIFICATION FOR INSULATED STEEL DECKS

Sections of the steel deck formed in sheets shall provide rigidity and strength and not be subject to excessive deflection. Steel deck shall be free from perforations which will allow hot Bitumen to drip through the deck and shall be free from bolt heads, purlin clips and insulation cleats and other objectionable projections. Deck and fixtures shall have a shop coat of paint. Roofing specifications constructed of Coal Tar Pitch are not recommended for application over steel deck construction.

The steel deck shall first be covered with a solid mopping of Asphalt into which, while hot, shall be firmly embedded a layer of approved roof insulation applied strictly according to architect's or manufacturer's specifications. On roof decks having an incline exceeding ¾ in. in 12 ins. insulation shall be secured in place with metal clips or bolts in addition to the bond provided by the Asphalt. (If additional layers of roof insulation are specified, joints between each subsequent layer shall be broken and layers of insulation shall be bonded together and firmly embedded into a solid mopping of hot Asphalt.)

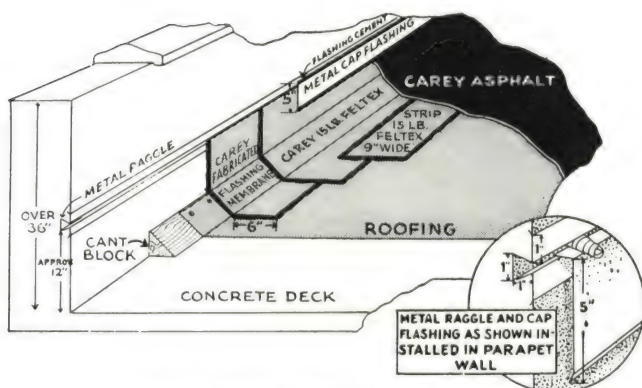
All Asphalt used in the application of insulation for bonding roofing to the surface of the insulation, when applied over steel deck, shall have a minimum melting point of 190° F. Over the surface of the applied insulation the built-up roof, type as specified, shall be applied.

CAREY BONDED FLASHING DETAILS



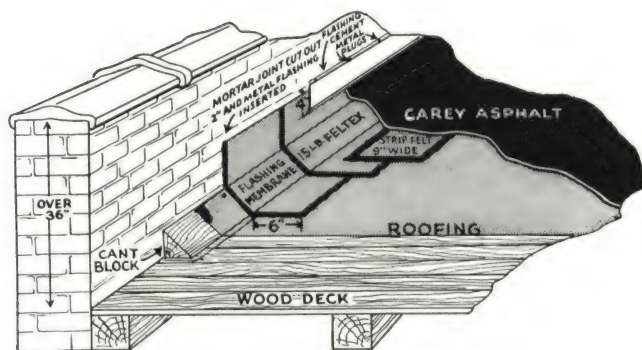
Carey Approved Flashing Detail No. 1

Recommended for use on brick or concrete parapet walls not exceeding 36 in. in height, on which coping is to be applied



Carey Approved Flashing Detail No. 2

Recommended for use on concrete parapet walls exceeding 36 in. in height



Carey Approved Flashing Detail No. 3

Recommended for use on brick parapet walls exceeding 36 in. in height

The three flashing details shown at the left are adaptable to new or replacement work and may be modified to meet almost any unusual condition. The methods of installation are clearly indicated. The text below describes the materials used in the flashing and the laying of the sheets over the wood cant strip.

Carey Fabricated Flashing Membrane

A two-ply preformed Fabricated Flashing Membrane consisting of laminations of Waterproofed Cotton Fabric and Feltex, bonded together at the factory with an especially blended and refined asphalt.

Weight of sheet per 100 sq. ft. Approx. 32 lbs.

Stretch before fracture. Approx. 10%

Mullen test for tensile strength

against felt side of Membrane. Approx. 190 lbs.

On account of the elasticity, stretch, strength and extreme flexibility of this material it will conform readily and bond securely with hot asphalt to parapet walls, angles and corners, thus tending to eliminate all danger of cracks and breaks found in ordinary flashing material as the result of misuse, movement in the roof deck or settling of the building.

Wood Cant Strip

Wood cant strip shall be constructed out of a diagonal half of a 4x4 which shall be placed securely in the angle of the wall and cemented in place with a mopping of hot asphalt on hard surfaced decks or toe nailed at the lower edge of the cant strip on wood decks.

The heavy base sheet and all top sheets of the built-up roof shall extend to the top edge of the wood cant strip and be secured in place with nails driven through flat tin caps, after which a 12-in. strip of CAREY FABRICATED FLASHING MEMBRANE shall be laid parallel with the cant strip extending 3 ins. up on the vertical side of the parapet wall and approximately 3½ ins. out on the roof and secured in place with a mopping of hot asphalt.

The rest of the flashing construction shall be installed in accordance with Carey Approved Flashing Details Nos. (1) (2) (3).

Alternate—Plastic Flashings

As an alternate construction it will be satisfactory to substitute Carey Flashing Cement in place of hot Asphalt as the bonding material on the above Flashing constructions.

On those details where metal Counter Flashings are specified, if Carey Flashing Cement is used as the bonding material, it will be satisfactory to use as a Counter Flashing over the top edge of the base Flashing a four inch wide strip of saturated cotton fabric laid in Carey Flashing Cement and trowel coated with same material.



MASTER
SPECIFICATIONS
for
BUILT-UP ROOFS

BONDED 5-10-20 YEARS



FLINTKOTE



Architectural Catalog
of
SHINGLES, ROOFINGS
MASTIC FLOORING
ASPHALT PLANK
PROTECTIVE
COATINGS
WATERPROOFING

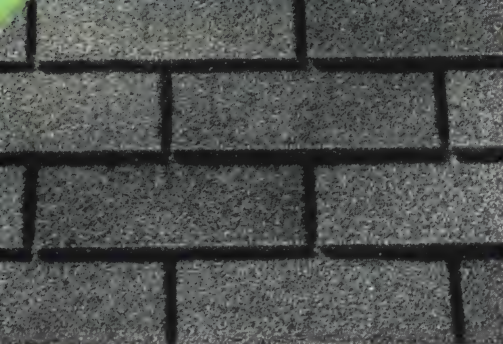


THE FLINTKOTE COMPANY

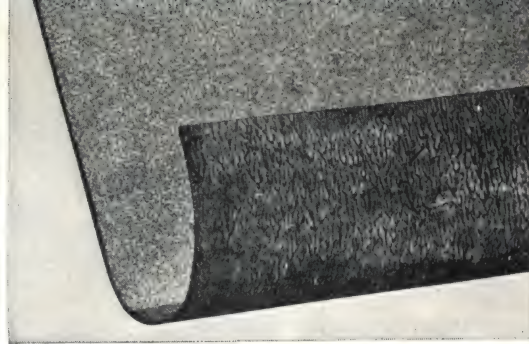
50 WEST 50th STREET

NEW YORK CITY

BOSTON	•	CHICAGO	•	CINCINNATI	•	DETROIT
NEW ORLEANS	•	ATLANTA	•	DENVER	•	LOS ANGELES
SAN FRANCISCO	•	PORTLAND	•		•	SEATTLE



ASPHALT SHINGLES



ROLL ROOFINGS



BUILT-UP ROOFING

BRANCH OFFICES

ATLANTA, GA.

1215 Sylvan Road, S.W.
Raymond 1131

BOSTON, MASS.

31 St. James Avenue
Hancock 5120

CHICAGO, ILL.

624 So. Michigan Avenue
Wabash 4940

CINCINNATI, OHIO

74th and Lebanon Streets
Valley 0600

DETROIT, MICH.

14201 Schaeffer Highway
Hogarth 1606

NEW ORLEANS, LA.

Poland and Galvez Streets
Franklyn 4121



DENVER, COLO.

1628 Champa Street
Tabor 6787

LOS ANGELES, CAL.

55th and Alameda Streets
Lafayette 2111

PORTLAND, ORE.

419 Pitlock Block
Broadway 0102

SALT LAKE CITY, UTAH

321 First Avenue
Wasatch 1518

SAN FRANCISCO, CAL.

1519 Shell Building
Sutter 7571

SEATTLE, WASH.

621 Northern Life Building
Main 5842

SPOKANE, WASH.

E. 618 23rd Avenue
Riverside 8548

FLINTKOTE ASPHALT SHINGLES AND ALLIED ASPHALT PRODUCTS

Thikbut Shingles • Setab Shingles • Brick-Type Siding

Also all other types of Asphalt Shingles, Roll Roofing, Building Papers, Felts, Waterproofing and Roofing Compounds, Expansion Joint and Asphalt Plank.

THE FLINTKOTE COMPANY and its associate companies manufacture asphalt roofings and sidings for every type building. The following pages illustrate shingles and sidings of interest to architects for new homes or for application over old roofs and side-walls.

The wide range of plain and blended colors of Flintkote Shingles and Sidings permits a choice to satisfy every taste and harmonizes with any color scheme or architectural arrangement.

Long life, weather and fire resistance, and low cost make Flintkote products an economical investment in home protection.

Over thirty years of experience as one of the foremost manufacturers of roofing products is THE FLINTKOTE COMPANY's assurance of the highest uniform quality.

How Obtainable

Dealers throughout the United States carry Flintkote products in stock. Pioneer Flintkote products are available throughout the area west of the Rocky Mountains.

Prompt shipments can be made from their stocks or from factories located in East Rutherford, N. J., Chicago Heights, Ill., New Orleans, La., Cincinnati, Ohio, Detroit, Mich., and Los Angeles, Cal. Warehouses located strategically complete an unexcelled distributing organization.

Sales representatives in all territories will supply architects with samples, literature, and complete information, or these may be obtained by communicating with any of our offices.

Roofers and contractors everywhere are familiar with the application of our products. Printed instruction sheets are included in each package.

Exhibits

Architects and contractors are cordially invited to visit exhibits maintained at our sales offices. A complete display of our products and their uses, located at our general offices in the R. C. A. Building, 50 West 50th Street, New York, N. Y., will be of especial interest. You are urged to make our offices your headquarters when in New York.

THE FLINTKOTE COMPANY

50 West 50th Street, R. C. A. Building, New York, N. Y.

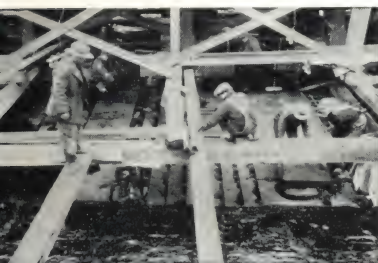
(Telephone: Circle 6-2040)

Pacific Coast Area

PIONEER-FLINTKOTE COMPANY

(For offices, see list at the left)

WATERPROOFING



PROTECTIVE COATINGS



MASTIC FLOORING



SAFE-T-PLANK

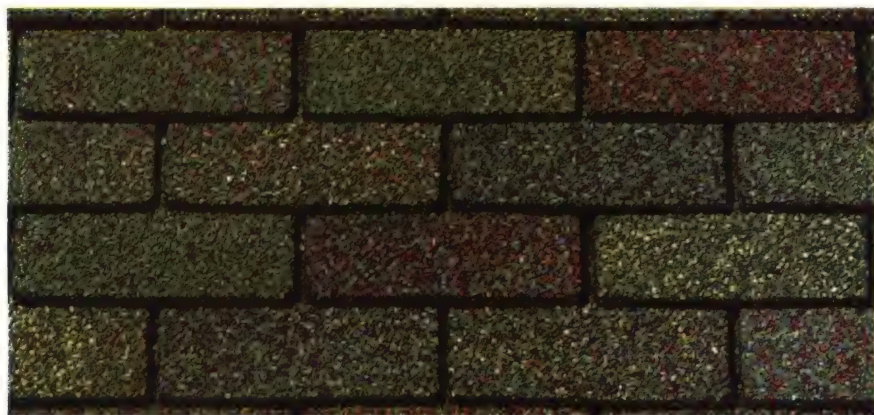


FLINTKOTE

THIKBUT STRIP SHINGLES

Thikbut Strip Shingles are an outstanding roofing value. Manufacturing economies make them moderate in cost — while the exclusive Flintkote features of Supersaturation for longer life, Stabilized Coating for greater weather resistance, built-up construction for greater thickness and durability, make Thikbut Strips

one of the sturdiest and most beautiful of asphalt shingles today. Whether for new buildings or for re-roofing, Thikbut Strips are eminently suitable. Typical colors, in addition to the panels shown on the page, are Clover Green, Blue-Black, and Tile Red. Consider these superiorities as compared with standard weight shingles:



MOTTLED GREEN



MOTTLED RED



MOTTLED GRAY

1. Added Life

double layers of asphalt and mineral surfacing.

2. Added Beauty

deeper shadow lines—richer colors.

3. Added Weight

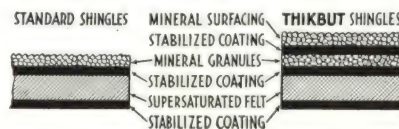
at the butts where most needed.

4. Added Thickness

greater protection—smoother laying

5. Added Resistance

to weather and fire.



Magnified Cross Sections Illustrate the Greater Value in Thikbut Strips

CONDENSED SPECIFICATION

The roof shall be covered with Flintkote Thikbut Shingles (color) manufactured by The Flintkote Company and applied according to manufacturers' printed instructions.

DATA

Strips per square	80
Weight per sq. approx.	215 lbs.
Nails per strip	4
Size	12" x 36"
Exposure	5"
Head-lap	2"

Underwriters' Label—Class C

FLINTKOTE ASPHALT SHINGLES



10" SQUARE BUTT STRIP SHINGLES—SPRING BLEND

• SQUARE BUTT STRIP SHINGLES

These shingles are made in both standard and giant weights in a number of sizes, colors, and thicknesses as shown in the chart. Especial attention is called to the thick-butt types which are the highest development in quality and long life of all asphalt shingles.

• HEXAGON STRIP SHINGLES

The difference between the Square Butt Strip Shingle and the Hexagon Strip is in the shape. The quality is the same in both. The strips have two shingles or tabs to the 36-in. length. They produce an interesting surface pattern and can be obtained in a variety of colors.

• INDIVIDUAL SHINGLES

These shingles are of the same quality of material and manufacture as the others mentioned. They are made in several different sizes, designs and weights, among them, Thatch Shingles, Flintlock Shingles, Shurlok Shingles, and Super Giant Shingles. All are suitable for new buildings or for re-roofing.

• REXTAB STRIP SHINGLES

The Rextab is an economical strip of pleasing pointed design. It is especially adapted for small houses, being reasonable in cost, simple to apply, and very satisfactory as a roofing or siding.

• BRICK-TYPE SIDING STRIPS

Asphalt Strip products of brick-like appearance for siding or re-siding frame or stucco buildings. Economical because they eliminate maintenance; attractive because they resemble brick in texture, mortar-line and dimensions. Made in three weights.

• TAPERED STRIP SHINGLES

These shingles are heavier than ordinary shingles, with the extra weight and weatherproofing at the butt where the wear comes. Their tapered or wedge shape also causes the shingles to lie snug on the roof giving greater resistance to wind.

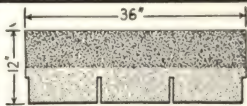
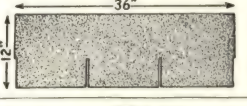
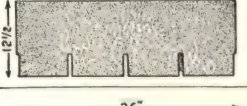
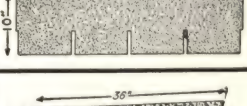
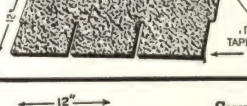
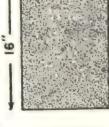
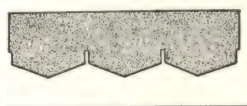
THE FLINTKOTE COMPANY

SELECTION DATA FOR FLINTKOTE ASPHALT SHINGLES

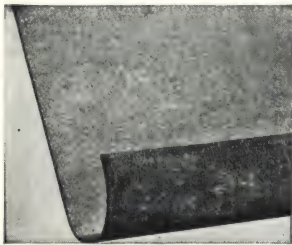


The table below gives the names, types and general specifications of Flintkote Shingles for buildings requiring a high quality shingle. The table allows a much easier method of comparison of size, weights, etc., than any other plan.

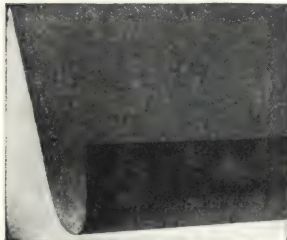
(Note: Comparable products are manufactured by PIONEER-FLINTKOTE COMPANY. There are, however, slight variations in weight, size and color.)

Shape, size and name	Number of colors	Exposure, in.	Head-lap, in.	Under-writers' label, class	Per square		
					Strips or shingles	Bundles	Approx. wt., lb.
 Thikbut Strip	7	5	2	C	80	3	210
 12-in. Giant Strip	7	5	2	C	80	3	257
 12 1/2-in. Square Butt Strip	6	4	4 1/2	C	100	3	266
 10-in. Strip	7	4	2	C	100	2	210
 Tapered Strip Shingles (Beckman-Dawson)	7	5	2	C	80	3	260
 Super-Giant Individual	7	5	6	C	226	4	325
	7	3 (side lap)	2	C	113	2	162
	7	9 1/3	6 3/8	C	147	...	211
 Rextab Strip	5	4	2	C	100	2	190
 Giant Hexagon Strips	5	5 1/4	3	C	76	3	227
	7	4 3/8	3	C	86	3	235
 Hexagon Strips	6	4 3/8	3	C	86	2	186
	6	4	4	C	100	3	218
	7	4 3/8	2	C	86	2	167
 Flintlock Shingle	6	...	3 1/4 (side lap)	C	77	2	138
 Thikbrik Siding Strips	4	3	...	...	134	3	160
	6	3	...	...	134	3	210
	5	3	...	...	131	3	210
	9	3	...	...	131	3	230

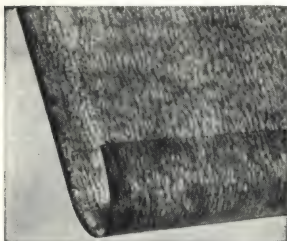
FLINTKOTE ROLL ROOFINGS



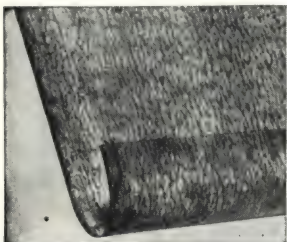
"Rex Flintkote"



Flintkote "Stalwart"



Flintkote "Reliance"



Flintkote "Guardian"

MINERAL SURFACED

Same Mineral Quality and Texture as Shingles

Used where a good roofing at low cost is desired for industrial plants and on low cost buildings, sheds, etc. It gives long service. The Certificate of Quality with each roll guarantees the highest quality to the user.

Colors—Green, Red, Clover Green, Blue Black and Tile Red.

"REX FLINTKOTE"

The Double-Purpose Roofing—Can Be Laid Either Side Up. Rayflex Finish One Side—Corrugated on the Other

Carries the Underwriters' Class C Label on All Weights

Dependable, economical roof protection for all types of industrial structures. Reversible. One side bright gray in color and smooth in texture, the other side has corrugated finish, protected by fine micaceous talc, thoroughly rolled in. Certificate of Quality on every roll. Nails, cement and directions for laying with each roll.

FLINTKOTE "STALWART"

Meets Government and Railroad Specifications
Corrugated, Gun Metal Finish

Carries the Underwriters' Class C Label on 45, 55 and 65-lb. Weights

Corrugated finish high quality roll roofing made to meet government and railroad specifications. Gun metal finish both sides. Made in rolls of 108 sq. ft., in four weights.

FLINTKOTE "RELIANCE"

Smooth Mica Surfaced Both Sides

Carries the Underwriters' Class C Label on 55, 65 and 75-lb. Weights

Durable mica surfaced (both sides) roll roofing of high quality. Made in rolls of 108 sq. ft., in five weights.

FLINTKOTE "GUARDIAN"

Corrugated, Talc Finish

Does Not Carry Underwriters' Label

A well-made, moderately-priced roll roofing. Made for use where permanency is not paramount.

Av. wt. per roll, lb.	Approx. sq. ft. per roll	Approx. width of roll, in.	Underwriters' label, class
MINERAL SURFACED ROOFING			
90	108	36	C
"REX FLINTKOTE"			
55	108	36	C
65	108	36	C
75	108	36	C
..	...	..	..
..	...	..	..
"STALWART"			
35	108	36	..
45	108	36	C
55	108	36	C
65	108	36	C
..	...	..	..
"RELIANCE"			
35	108	36	..
45	108	36	..
55	108	36	C
65	108	36	C
75	108	36	C
"GUARDIAN"			
35	108	36	..
45	108	36	..
55	108	36	..

FLINTKOTE BUILT-UP ROOFING

Engineering Services by Roofing Engineers

Flintkote Sales Engineers are prepared to furnish definite recommendations as to the correct type of roof to be used with any type of construction. Any special problem may be referred to them with assurance of co-operation.

Built-up Roofing Materials and Application

Flintkote Built-up Roofing Materials are manufactured in our own plants according to our strict specifications. With this control of manufacture, quality of product is certain and identical in all respects from all of our factories.

Flintkote Bonded Built-up Roofs are applied only by Flintkote approved roofers insuring a roof built to exact specifications as required by THE FLINTKOTE COMPANY.

Types and Finishes of Built-up Roofs

Flintkote specifications have been made complete by incorporating the following types of built-up roofing construction, each for a specified term of years:

- (1) Smooth Surfaced Asphalt Roofs;
- (2) Gravel or Slag Surfaced Asphalt Roofs;
- (3) Crushed Slate Surfaced Asphalt Roofs;
- (4) Coal Tar Felt and Pitch Roofs.

All of the above roofs will be bonded if desired.

Bond for Built-up Roofs and Flashings

If a Flintkote Bond is required, the roof shall be inspected by an authorized Flintkote Inspector. Such bonds will be given only when the roof is laid by an approved Flintkote Franchise Roofer in strict accordance with specifications.

Flintkote Standard Flashing Specifications used in conjunction with a bonded roof specification, will carry a flashing endorsement for a period of years corresponding to the type of flashing used.

Viskalt Compound

Viskalt Compound is an especially refined asphalt used where a superior product is desired and is particularly required for smooth surface roofs.

Flintkote Viskalt Saturated Felt

Viskalt Saturated Felt is the highest quality type of felt in both material and manufacture for use in built-up roofing. The high quality of this felt is maintained because of the fact that it is super-saturated with the same type of bitumen used in the production of Viskalt. This felt carries the Underwriters' Label as provided for built-up roofing purposes.

Made in weights of 14 lbs., 15 lbs. and 30 lbs. per 100 sq. ft.

TABULATED SPECIFICATIONS FOR VARIOUS TYPES OF FLINTKOTE BUILT-UP ROOFING

Period of bond—years	Specification Designation	Page No.	Limitations of roof incline in inches per foot	Surface finish	Construction		Material weights												Weight per square	
					Number of plies of felt	Layers of bitumen	Primer	Sheathing paper	Base sheet	Asphalt felt	Tarred felt	Rex construction	Cap sheet	Asphalt	Pitch	Viskalt	Static roof coating	Gravel	Slag	Smooth	Mineral surfaced	Gravel surfaced	Slag surfaced	Underwriters' classification

Standard Specifications for Wood or Precast Gypsum Decks

20	A-3-W	6	¼ up to 3	Gravel or slag	One 30-lb. felt (asphalt) Three 15-lb. felts (asphalt)	4			32	49					140			400	300			621	521	A	
20	A-4-W	6	¼ up to 2	Gravel or slag	Five 15-lb. felts (tar) One sheathing paper	4		5				81			150			400	300			636	536	A	
15	B-3-W	6	¼ up to 3	Gravel or slag	One 30-lb. felt (asphalt) Two 15-lb. felts (asphalt)	3			32	32					110			400	300			574	474	A	
15	B-4-W	6	¼ up to 2	Gravel or slag	Four 15-lb. felts (tar) One sheathing paper	3		5			65				125			400	300			595	495	A	
15	B-2-W	7	3 up to 9	Mineral	Three 15-lb. felts (asphalt) Rex Construction	4				49		110			120							279			C
10	C-3-W-S	7	3 up to 6	Gravel or slag	Five 15-lb. felts (asphalt) One 34-lb. base sheet	5					81				125			325	250			531	456	C	
10	†C-1-W-C	7	¾ up to 3	Cap sheet	Two 15-lb. felts One 34-lb. cap sheet	3			34	32			34	90					190						C
10	C-2-W	7	3 up to 9	Mineral	Two 15-lb. felts (asphalt) Rex Construction	2				32		110			60							202			C
10	†C-1-W	7	¾ up to 6	Viskalt	One 30-lb. felt (asphalt) Two 15-lb. felts (asphalt)	3				32	32					90				154					C
10	C-1-W-E	7	¾ up to 6	Static roof coating	One 30-lb. felt (asphalt) Two 15-lb. felts (asphalt)	3				32	32				60			30			154				C

†Over rigid insulation or over steel decks with at least ¼-in. layer of insulation any specification marked "†" may be used, provided that on all decks having inclines of over 3 in. per foot provision for nailing is made.

Standard Specifications for Non-Combustible Decks

20	†A-3-C	7	¼ up to 3	Gravel or slag	Four 15-lb. felts (asphalt)	5	9*	.....	65	.....	180	.....	400	300	.....	654	554	A
20	†A-4-C	7	¼ up to 2	Gravel or slag	Four 15-lb. felts (tar)	5	.....	.....	65	.....	200	.....	400	300	.....	665	565	A
15	†B-3-C	7	¼ up to 3	Gravel or slag	Three 15-lb. felts (asphalt)	4	9*	.....	49	.....	150	.....	400	300	.....	608	508	A
15	†B-4-C	7	¼ up to 2	Gravel or slag	Three 15-lb. felts (tar)	4	.....	.....	49	.....	175	.....	400	300	.....	624	524	A
15	†B-2-C	8	3 up to 9	Mineral	{ Two 15-lb. felts (asphalt) Rex Construction }	4	9	.....	32	.....	110	120	.....	.....	.....	271	.....	C
10	C-3-C-S	8	3 up to 6	Slag or gravel	{ Four 15-lb. felts (asphalt) Three 15-lb. felts (asphalt)	5	9*	.....	65	.....	125	.....	325	250	.....	624	449	C
10	C-1-C-C	8	¾ up to 3	Cap sheet	{ One 34-lb. cap sheet One 15-lb. felt (asphalt)	4	9	.....	49	.....	34	120	.....	.....	212	.....	C	
10	C-2-C	8	3 up to 9	Mineral	{ Rex Construction Three 15-lb. felts (asphalt)	3	9	.....	15	.....	110	90	.....	.....	224	.....	C	
10	C-1-C	8	¾ up to 6	Viskalt	{ Three 15-lb. felts (asphalt) One 30-lb. felt (asphalt)	4	9	.....	49	.....	120	.....	.....	.....	178	.....	C	
10	C-1-C-E	8	¾ up to 6	Static roof coating	{ Two 15-lb. felts	4	9	.....	32	32	.....	90	.....	30	.....	193	.....	C

*Primer required only on gypsum decks.

Standard Specifications for Under Promenade Tile or Safe-T-Plank

10	C-1-P	8	Up to 1	Tile or Safe-T-Plank	Five 15-lb. felts (asphalt)	6	9	.....	81	.....	180	.....	270	.....	.....	.....	.....	.....
10	C-4-P	8	Up to 1	Tile	Five 15-lb. felts (tar)	6	.....	.....	81	.....	200	.....	281	.....	.....	.....	.....	.....

Note: Specifications for use in the eleven western states are different from above, and can be obtained from offices of PIONEER-FLINTKOTE COMPANY (see page 1 for addresses, etc.). No bonds are issued for projects in that area. Slag or gravel surfaced roofs are recommended

for use in or south of the states of South Carolina, Georgia, Tennessee, Arkansas and Oklahoma as we will not bond smooth surfaced asphalt roofs in that area.

ARCHITECTS' CONDENSED SPECIFICATIONS

Flintkote Built-up Roofing Over Wood or Precast Gypsum Decks

SPECIFICATION A-3-W (Bond: 20 YEARS)

Type—Slag or Gravel Surface Viskalt Saturated Felts, Asphalt.

Deck—Wood (or precast gypsum).

Incline—¼-in. up to 3-in. per foot.

Classification—Underwriters' "A."

Insert under "Roofing"—Built-up Roofing shall be a Flintkote Specification A-3-W applied as follows subject to the Flintkote detailed specification. Apply a Flintkote 30-lb. Viskalt Saturated Felt (or two layers of 15-lb. Viskalt Saturated Felt lapped 19 in.) laid dry. Over this base apply three layers of 15-lb. Viskalt Saturated Felts in shingle construction, lapped 24 ¾ in. and solidly cemented with Flintkote Roofing Asphalt. Coat surface with a heavy pouring of Flintkote Roofing Asphalt and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 20 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 20 years.

SPECIFICATION A-4-W (Bond: 20 YEARS)

Type—Slag or Gravel Surface Tarred Felts, Rex Blended Pitch.

Deck—Wood (or precast gypsum).

Incline—¼-in. up to 2-in. per foot.

Classification—Underwriters' "A."

Insert under "Roofing"—Built-up Roofing shall be a Flintkote Specification A-4-W applied as follows subject to Flintkote detailed specification. Apply one layer of sheathing paper and over this apply two layers of Flintkote 15-lb. Tarred Felt laid dry in shingle construction, lapped 17 in. Over these dry felts apply three additional layers of 15-lb. Tarred Felts in shingle construction, lapped 22 in. and solidly cemented with Flintkote Rex Blended Pitch. Coat surface with a heavy pouring of Flintkote Rex Blended Pitch and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 20 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 20 years.

SPECIFICATION B-3-W (Bond: 15 YEARS)

Type—Slag or Gravel Surface Viskalt Saturated Felts, Asphalt.

Deck—Wood (or precast gypsum).

Incline—¼-in. up to 3-in. per foot.

Classification—Underwriters' "A."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification B-3-W applied as follows subject to the Flintkote detailed specification. Apply a Flintkote 30-lb. Viskalt Saturated Base Felt (or two layers of 15-lb. Viskalt Saturated Felt, lapped 19 in.) laid dry. Over this base apply two layers of 15-lb. Viskalt Saturated Felt in shingle construction, lapped 19 in., and solidly cemented with Flintkote Roofing Asphalt. Coat surface with a heavy pouring of Flintkote Roofing Asphalt and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 15 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 15 years.

SPECIFICATION B-4-W (Bond: 15 YEARS)

Type—Slag or Gravel Surface Tarred Felts, Rex Blended Pitch.

Deck—Wood (or precast gypsum).

Incline—¼-in. up to 2-in. per foot.

Classification—Underwriters' "A."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification B-4-W applied as follows subject to the Flintkote detailed specification. Apply one layer of sheathing paper and over this apply two layers of 15-lb. Tarred Felts laid dry in shingle construction, lapped

17 in. Over these dry felts apply two additional layers of 15-lb. Tarred Felts in shingle construction, lapped 17 in., and solidly cemented with Flintkote Rex Blended Pitch. Coat surface with a heavy pouring of Flintkote Rex Blended Pitch and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 15 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 15 years.

SPECIFICATION B-2-W (Bond: 15 YEARS)

Type—Mineral surfaced Rex Construction, Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Wood (or precast gypsum).

Incline—3 in. up to 9 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification B-2-W applied as follows subject to the Flintkote detailed specification. Apply one layer of 15-lb. Viskalt Saturated Felt laid dry. Over this felt apply two additional layers of 15-lb. Viskalt Saturated Felt lapped 19 in. and cemented solidly to the first felt and to each other with Flintkote Roofing Asphalt. Over these felts apply Rex Construction Roofing in two layers, solidly cemented to each other with Flintkote Roofing Asphalt.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 15 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 15 years.

SPECIFICATION C-3-W-S (Bond: 10 YEARS)

Type—Slag or Gravel Surface Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Wood (or precast gypsum).

Incline—3 in. up to 6 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification C-3-W-S applied as follows subject to the Flintkote detailed specification. Apply five layers of 15-lb. Viskalt Saturated Felts in shingle construction, lapped 29 1/4 in., and cemented solidly between laps for a distance of 25 in. with Flintkote Roofing Asphalt. Coat surface with a heavy pouring of Flintkote Roofing Asphalt and embed 325 lbs. of gravel or 250 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

SPECIFICATION C-1-W-C (Bond: 10 YEARS)

Type—Smooth Surface 34-lb. Flintkote Cap Sheet, Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Wood (or precast gypsum).

Incline—3/4 in. up to 3 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification C-1-W-C applied as follows subject to the Flintkote detailed specification. Apply one layer of Flintkote 34-lb. base sheet laid dry. Over this felt apply two layers of 15-lb. Viskalt Saturated Felts, lapped 19 in., and solidly cemented with Flintkote Roofing Asphalt. Over these felts apply one layer of Flintkote 34-lb. Cap Sheet, lapped 6 in., and solidly cemented with Flintkote Roofing Asphalt.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Flintkote Built-Up Roofing — Non-Combustible Decks

SPECIFICATION A-3-C (Bond: 20 YEARS)

Type—Slag or Gravel Surface Viskalt Saturated Felts, Asphalt.

Deck—Non-combustible (poured or precast concrete, poured gypsum or book tile).

Incline—From 1/4 in. up to 3 in. per foot (wood nailing strips on 4-ft. centers required on inclines over 2 in. per foot unless surface of deck allows nailing).

Classification—Underwriters' "A."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification A-3-C applied as follows subject to the Flintkote detailed specification. (Where deck is of gypsum, prime surface with asphalt primer.) Apply four layers of 15-lb. Flintkote Viskalt Saturated Felts laid in shingle construction, lapped 27 1/2 in., and solidly cemented with Roofing Asphalt. Coat surface with heavy pouring of Flintkote Roofing Asphalt and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 20 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 20 years.

SPECIFICATION A-4-C (Bond: 20 YEARS)

Type—Slag or Gravel Surface Tarred Felts, Rex Blended Pitch.

Deck—Non-combustible (poured or precast concrete, poured gypsum or book tile).

Incline—From 1/4 in. up to 1 in. per foot on poured or precast concrete or book tile; from 1/4 in. up to 2 in. per foot on poured gypsum.

Classification—Underwriters' "A."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification A-4-C applied as follows subject to the Flintkote detailed specification. Apply four layers of Flintkote 15-lb. Tarred Felts in shingle construction, lapped 24 1/2 in., and solidly cemented with Flintkote Rex Blended Pitch. Coat surface with heavy pouring of Flintkote Rex Blended Pitch and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 20 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 20 years.

Bond—Manufacturers' bond on roofing and flashing endorsement shall be furnished for a period of 10 years.

Note: Bond on this specification not issued in or south of the states of South Carolina, Georgia, Tennessee, Arkansas and Oklahoma.

SPECIFICATION C-2-W (Bond: 10 YEARS)

Type—Mineral Surfaced Rex Construction, Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Wood (or precast gypsum).

Incline—3 in. up to 9 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification C-2-W applied as follows subject to the Flintkote detailed specification. Apply two layers of 15-lb. Viskalt Saturated Felts laid dry, lapped 19 in. Over these felts apply Rex Construction Roofing in two layers solidly cemented with Flintkote Roofing Asphalt.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

SPECIFICATION C-1-W (Bond: 10 YEARS)

Type—Smooth Surfaced Viskalt Saturated Felts, Flintkote Viskalt Roofing Compound.

Deck—Wood (or precast gypsum).

Incline—3/4 in. up to 6 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification C-1-W applied as follows subject to the Flintkote detailed specification. Apply a Flintkote 30-lb. Viskalt Saturated Base Felt laid dry. Over this base apply two layers of 15-lb. Viskalt Saturated Felts in shingle construction, lapped 19 in., and solidly cemented with Flintkote Viskalt Roofing Compound. Felts shall be surfaced with a heavy coating of Viskalt Roofing Compound.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

Note: Bond on this specification not issued in or south of the states of South Carolina, Georgia, Tennessee, Arkansas and Oklahoma.

SPECIFICATION C-1-W-E (Bond: 10 YEARS)

Type—Smooth Surfaced, Viskalt Saturated Felts, Flintkote Roofing Asphalt, top surfaced with Static Roof Coating.

Deck—Wood (or precast gypsum).

Incline—3/4 in. up to 6 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification C-1-W-E applied as follows subject to the Flintkote detailed specification. Apply a Flintkote 30-lb. Viskalt Saturated Felt laid dry. Over this base apply two layers of 15-lb. Viskalt Saturated Felt in shingle construction, lapped 19 in., and solidly cemented with Flintkote Roofing Asphalt. Felt shall be surfaced with Static Roof Coating (Fibrated) three gallons per 100 sq. ft.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

Note: Bond on this specification not issued in or south of the states of South Carolina, Georgia, Tennessee, Arkansas and Oklahoma.

SPECIFICATION B-3-C (Bond: 15 YEARS)

Type—Slag or Gravel Surface Viskalt Saturated Felts, Asphalt.

Deck—Non-combustible (poured or precast concrete, poured gypsum or book tile).

Incline—From 1/4 in. up to 3 in. per foot (wood nailing strips on 4-ft. centers required on inclines over 2 in. per foot unless surface of deck allows nailing).

Classification—Underwriters' "A."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification B-3-C laid as follows subject to the Flintkote detailed specification. (Where deck is of gypsum prime surface with asphalt primer.) Apply three layers of 15-lb. Flintkote Viskalt Saturated Felts in shingle construction, lapped 24 1/4 in., and solidly cemented with Flintkote Roofing Asphalt. Coat surface with heavy pouring of Flintkote Roofing Asphalt and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 15 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 15 years.

SPECIFICATION B-4-C (Bond: 15 YEARS)

Type—Slag or Gravel Surfaced Tarred Felts, Rex Blended Pitch.

Deck—Non-combustible (poured or precast concrete, poured gypsum or book tile).

Incline—From 1/4 in. up to 1 in. per foot on poured or precast concrete or book tile; from 1/4 in. up to 2 in. per foot on poured gypsum.

Classification—Underwriters' "A."

Insert Under "Roofing"—Built-up Roofing shall be a Flintkote Specification B-4-C laid as follows subject to the Flintkote detailed specification. Apply three layers of Flintkote 15-lb. Tarred Felts in shingle construction, lapped 22 in., and solidly cemented with Flintkote Rex Blended Pitch. Coat surface with heavy pouring of Flintkote Rex Blended Pitch and embed 400 lbs. of gravel or 300 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 15 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 15 years.

SPECIFICATION B-2-C (Bond: 15 YEARS)

Type—Mineral Surfaced Rex Construction Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Non-combustible (poured concrete or poured gypsum).

Incline—3 in. up to 9 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up roofing shall be a Flintkote Specification B-2-C laid as follows subject to the Flintkote detailed specification. Prime the deck with Flintkote Asphalt Primer. Apply two layers of 15-lb. Viskalt Saturated Felt lapped 19 in. and solidly cemented in Flintkote Roofing Asphalt. Over these felts apply Rex Construction Roofing in two layers, solidly cemented to each other with Flintkote Roofing Asphalt.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 15 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 15 years.

SPECIFICATION C-3-C-S (Bond: 10 YEARS)

Type—Slag or Gravel Surface Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Non-combustible.

Incline—3 in. up to 6 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up Roofing shall be a Flintkote Specification C-3-C-S laid as follows subject to the Flintkote detailed specification. Prime the deck with Flintkote Asphalt Primer and apply four layers of 15-lb. Viskalt Saturated Felt, lapped 27½ in., solidly cemented with Flintkote Roofing Asphalt. Coat surface with a heavy pouring of Flintkote Roofing Asphalt and embed with 325 lbs. of gravel or 250 lbs. of slag.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

SPECIFICATION C-1-C-C (Bond: 10 YEARS)

Type—Smooth Surfaced Cap Sheet, Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Non-combustible.

Incline—¾ in. up to 3 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up Roofing shall be a Flintkote Specification C-1-C-C laid as follows subject to the Flintkote detailed specification. Prime the deck with Flintkote Asphalt Primer. Apply three layers of 15-lb. Viskalt Saturated Felts lapped 24¾ in. and solidly cemented with Flintkote Roofing Asphalt. Over these felts apply one layer of Flintkote 34-lb. Cap Sheet lapped 6 in. and cemented solidly with Flintkote Roofing Asphalt.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

Note: Bond on this specification not issued in or south of the states of South Carolina, Georgia, Tennessee, Arkansas and Oklahoma.

SPECIFICATION C-2-C (Bond: 10 YEARS)

Type—Mineral Surfaced Rex Construction, Viskalt Saturated Felts, Flintkote Roofing Asphalt.

Deck—Non-combustible (poured concrete or poured gypsum).

Incline—3 in. up to 9 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up Roofing shall be a Flintkote Specification C-2-C laid as follows subject to the Flintkote detailed specification. Prime the deck with Flintkote Asphalt Primer. Apply one layer of 15-lb. Viskalt Saturated Felt solidly cemented with Flintkote Roofing Asphalt. Over this felt apply Rex Construction roofing in two layers solidly cemented with Flintkote Roofing Asphalt.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

SPECIFICATION C-1-C (Bond: 10 YEARS)

Type—Smooth Surfaced Viskalt Saturated Felt and Flintkote Roofing Asphalt.

Deck—Non-combustible (poured or precast concrete, poured gypsum or book tile).

Incline—From ¾ in. up to 6 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up Roofing shall be a Flintkote Specification C-1-C applied as follows subject to the Flintkote detailed specification. Prime the deck with Flintkote Asphalt Primer. Apply three layers of 15-lb. Viskalt Saturated Felts in shingle construction, lapped 24¾ in., and solidly cemented with Flintkote Viskalt Roofing Compound. Felts shall be surfaced with Viskalt Roofing Compound.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

Note: Bond on this specification not issued in or south of the states of South Carolina, Georgia, Tennessee, Arkansas and Oklahoma.

SPECIFICATION C-1-C-E (Bond: 10 YEARS)

Type—Smooth Surfaced Viskalt Saturated Felt and Flintkote Roofing Asphalt, top surfaced with Static Roof Coating.

Deck—Non-combustible (poured or precast concrete, poured gypsum or book tile).

Incline—From ¾ in. up to 6 in. per foot.

Classification—Underwriters' "C."

Insert Under "Roofing"—Built-up Roofing shall be a Flintkote Specification C-1-C-E applied as follows subject to the Flintkote detailed specification. Prime the deck with Flintkote Asphalt Primer. Apply one layer of 30-lb. Viskalt Saturated Felt cemented solidly with Flintkote Roofing Asphalt. Over this base apply two layers of 15-lb. Viskalt Saturated Felt in shingle construction, lapped 19 in., and solidly cemented with Flintkote Roofing Asphalt. Felt shall be surfaced with Static Roof Coating (Fibrated) three gallons per 100 sq. ft.

Flashing—A Flintkote standard flashing shall be used. Guarantee period shall be for 10 years.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

Note: Bond on this specification not issued in or south of the states of South Carolina, Georgia, Tennessee, Arkansas and Oklahoma.

Flintkote Built-Up Roofing Under Promenade Tile**SPECIFICATION C-1-P (Bond: 10 YEARS)**

Type—Viskalt Saturated Felts and Flintkote Roofing Asphalt.

Deck—Concrete.

Incline—Not over 1 in. per foot.

Insert Under "Roofing"—Built-up Roofing under Promenade Tile shall be a Flintkote Specification C-1-P applied as follows subject to the Flintkote detailed specification. Apply five layers of Flintkote 15-lb. Viskalt Saturated Felts in two, two and one ply construction, solidly cemented with Flintkote Roofing Asphalt and surfaced with a heavy coating of Flintkote Roofing Asphalt.

Flashing—Copper Cap and Base Flashing shall be used, re-inforced with three plies of 15-lb. Viskalt Saturated Felts cemented solidly with Flintkote Roofing Asphalt.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

SPECIFICATION C-4-P (Bond: 10 YEARS)

Type—Tarred Felts and Rex Blended Pitch.

Deck—Concrete.

Incline—Not over 1 in. per foot.

Insert Under "Roofing"—Built-up Roofing under Promenade Tile shall be a Flintkote Specification C-4-P applied as follows subject to the Flintkote detailed specification. Apply five layers of Flintkote 15-lb. Tarred Felt in two, two and one ply construction, solidly cemented with Flintkote Rex Blended Pitch and surfaced with a heavy coating of Rex Blended Pitch.

Flashing—Copper Cap and Base Flashing shall be used, re-inforced with three plies of 15-lb. Viskalt Saturated Felts solidly cemented with Flintkote Roofing Asphalt.

Bond—Manufacturers' bond on roofing shall be furnished for a period of 10 years.

Recommendations Where Insulation is Used

Insulation Used Under Pitch and Gravel Roofs—Over Wood Decks—Normal Conditions—Nail insulation direct to wood deck. Over insulation apply respective specification as over wood decks.

Humid Conditions in the Building Itself—Before application of insulation apply one layer of sheathing paper and two layers of 15-lb. tarred felts laid dry. Apply insulation mopped solid in pitch and over insulation apply respective specification as over non-combustible decks. Where more than one layer of insulation is used each successive layer shall be mopped solidly with pitch to the preceding layer. Where incline is over 3 in. per foot insulation should also be nailed into deck.

Insulation Used Under Asphalt Types of Roofs—Over Wood Decks—Normal Conditions—Apply two layers of sheathing paper laid dry. Nail insulation into deck and over insulation apply respective specifications as over non-combustible deck.

Humid Conditions in the Building Itself—Before application of insulation apply two layers of 15-lb. felt laid dry, lapped 19 in. Apply insulation mopped solid in asphalt and over insulation apply respective specification as over non-combustible decks. Where more than one layer of insulation is used each successive layer shall be mopped solidly with asphalt to the preceding layer. Where incline is over 3 in. per foot insulation should also be nailed into deck.

Insulation Used Under Asphalt or Pitch and Gravel Roofs—Over Non-combustible Decks—Normal Conditions—Insulation shall be

solidly cemented to deck which has previously been primed and on inclines over 3 in. per foot nailing should be provided. Where more than one layer of insulation is used, each successive layer shall be cemented solidly with asphalt to the preceding layer if an asphalt specification is used (or with pitch if a pitch and gravel specification is used). Over insulation apply respective specification as over non-combustible decks.

Humid Conditions in the Building Itself—Over the primed deck apply a heavy mopping of roofing asphalt and embed two layers of 15-lb. felt solidly cemented with asphalt if an asphalt specification is used (or with pitch if a pitch and gravel specification is used). On inclines of 3 in. per foot, nailing should be provided. Where more than one layer is used, each successive layer should be cemented solidly with asphalt or pitch to the preceding layer. Over insulation apply respective specification as over non-combustible decks.

Requirements Where Steel Decks are Used

All steel decks shall be primed with asphalt primer if not provided with a shop coat and shall be covered with at least one ply of rigid insulation mopped solid with roofing asphalt. Over insulation apply the respective specification as over non-combustible decks. Where incline is over 3 in. per foot, means of fastening insulation to steel decks should be provided.

FLINTKOTE ASPHALT MASTIC FLOORS

Cold Laid Heavy Duty Floors for Many Special Uses



Concrete Floor Brought to Uniform Level for Installation of Wood Block Flooring



A Loading Platform of Cold Mastic That Withstands Traffic of 3½-ton Trucks



A Finished Floor Now Giving Satisfactory Service Under Severe Usage

Flintkote Asphalt Emulsion for Mastic Flooring

Asphalt emulsion mastic flooring is made by mixing Flintkote Asphalt Emulsion N-13-F integrally with portland cement and aggregates, the size of the aggregates depending on the use to which the floor is to be put. The resultant mix provides a cold laid mastic which can be installed, without expensive or highly trained labor, to a thickness of ½ in. over an old or new concrete, wood or metal base.

This is applied over a dried priming coat of Flintkote Emulsion C-13-HPC.

Flooring installed over the priming coat bonds perfectly to the base to which it is applied. It is light in weight, resilient, of a malleable nature, non-dusting, and will withstand heavy point loads.

Even under the extreme heat of summer it will not run, crawl or craze, or become tacky.



After Aggregates Have Been Mixed with Water to Make Workable, Flintkote Asphalt Emulsion Is Added Cold

Wide Range of Use

Mastic flooring made from Flintkote N-13-F asphalt emulsion may be used to advantage as a flooring for: industrial plants, warehouses, public buildings, barge decks, loading platforms, sidewalk and driveway patching, trucking aisles, ship decks, farm buildings, ramps, etc.

The Flintkote Laboratories and Engineers are prepared to co-operate on any special flooring problem and show in actual use, the suitability of this material, or to send information on specific flooring problems.

Resurfacing and Patching

Asphalt mastic floors may be laid to insure a long-life, heavy duty, serviceable installation over concrete or wood flooring which has failed due to splintering or wearing away. For patching purposes, where other flooring has failed, such as elevator take-offs, ramps, runways, trucking aisles, etc., cold laid mastic floors may be installed with assurance of satisfactory service.

Base for Decorative Floorings, Wood Block, Linoleum, Rubber Tile, Etc.

Asphalt tile, rubber tile, linoleum, wood block, composition flooring, etc., are permanently and successfully laid only when the base on which they are installed is prepared properly. Cold mastic flooring is used for leveling and bringing to desired grade or pitch, rough or otherwise unsuitable surfaces, for the application of decorative flooring. A course of asphalt emulsion flooring is often used over a concrete or wood base as a deadening and resilient cushion coat under hard, decorative floorings.

Asphalt emulsion mastic floors should not be confused with mastic floors applied in thin and lightly troweled coats. These heavy ½-in. thick floors installed under Flintkote specifications are rugged and tough industrial floors. They are designed for heaviest and continuous traffic. They are not recommended where they will not receive such use. For light traffic use, special specifications are available.

Specifications for mixing, approximate costs, etc., for installing mastic flooring will be furnished upon receipt of complete information.

Predominant Reasons for Using Heavy Duty Flooring Mastic

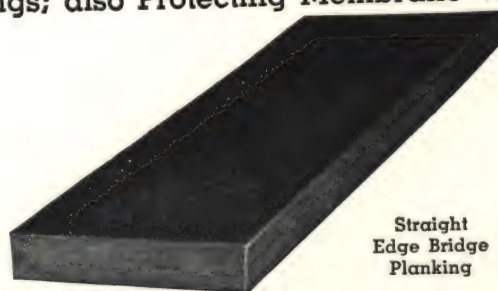
(1) It is applied cold. (2) It is odorless. (3) Under average drying conditions it will be ready within 48 hours. (4) It has a high degree of fire resistance. (5) It is not necessary to have a dry surface on which to apply it. (6) It can be applied directly over screeded concrete in place of a finishing cement surface. The concrete itself need not be thoroughly

dry for this application. (7) It can be laid in food storage rooms without danger of contaminating the food due to gases or fumes given off. (8) No especially trained labor is necessary. (9) Asphalt mastic floors improve under heavy traffic.

FLINTKOTE ASPHALT PLANK

For Severe Service on Bridges, Viaducts, Promenade Roof Decks, Trucking Aisles, Railroad Crossings; also Protecting Membrane Waterproofing

Flintkote Safe-T-Plank is an asphalt composition flooring and waterproofing in plank form—a dense, tough, malleable composition of asphalt fibre and mineral matter thoroughly bonded to make a waterproof, wear-resisting surface. The plank is designed for various services and therefore made in different thicknesses from 1-in. to 2-in., in



Straight Edge Bridge Planking

widths from 6 to 12 in., and lengths from 3 to 10 ft.

The slabs or planks are easily handled and laid. They offer a fast method of covering a surface and are ready for use as soon as laid when used for flooring.

Common labor or the waterproofing crew can lay the planks with ordinary tools.

THE FLINTKOTE COMPANY

FLINTKOTE ASPHALT EMULSIONS

Flintkote Asphalt Emulsions for Waterproofing, Dampproofing, Plaster Bond, Protective Coatings, Insulation Protection, Roof Coatings, Industrial Floors

Old and New Methods of Applying Asphalts: Their Advantages and Disadvantages

Through constant experiments in the Flintkote Laboratories, a method of preparing asphalt for cold application on any clean surface has been produced. This is known as the Emulsion Process, and offsets certain objections to the old methods of application. The asphalt is carried in suspension in water.

The Emulsion Process does away with hot kettles, handling of hot and dangerous material, fire risks, and certain bad weathering qualities, and it allows for heavy applications which cannot be made when cutbacks are used. It allows material to be applied to damp surfaces whereas other methods require dry surfaces. It also eliminates the possibilities of odors and fumes which will taint meats, dairy products, etc., since there are no solvents or cutbacks involved.

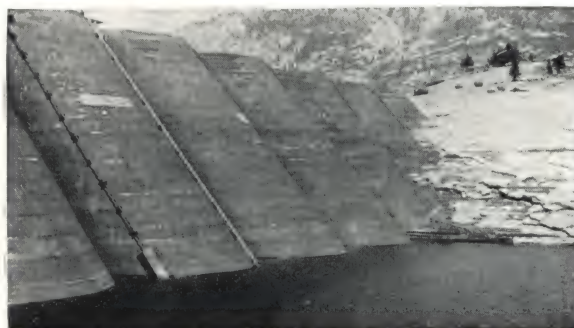
Method of Emulsification

Emulsification of asphalt is the process of producing minute particles of asphalt uniformly suspended in cold water by the addition of certain colloids. The type of colloid used depends upon the purpose for which the emulsion is to be used. The particles of asphalt vary from 1/1000 to 1/100,000 of an inch in diameter and are held definitely in suspension and will not settle in the container.

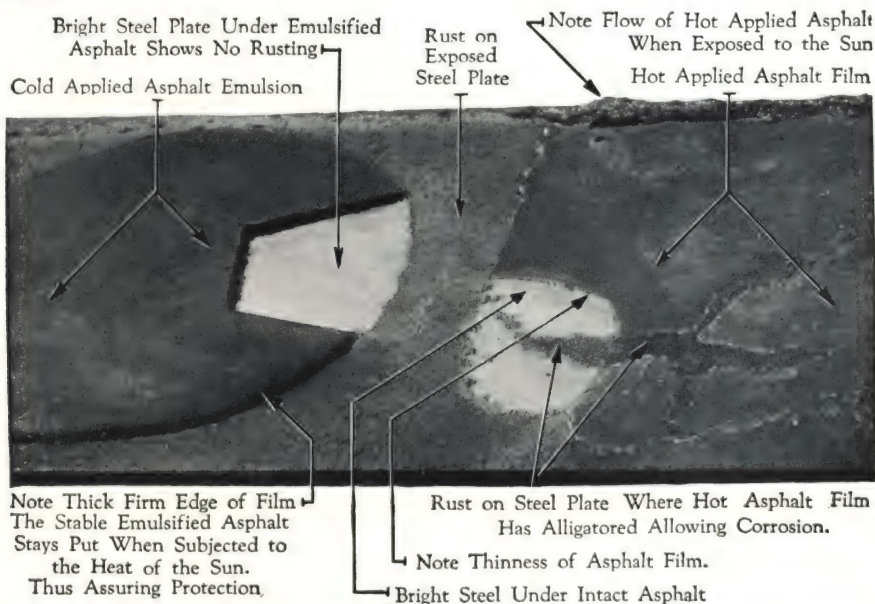
How Flintkote Asphalt Emulsions Act When Applied

When Flintkote Asphalt Emulsions are applied to any surface, the water rapidly evaporates and particles of asphalt coalesce, or run together, to form a continuous film of asphalt. Of heavy, paint-like consistency, the material is easily and economically applied in a limited number of coats. Using water as the vehicle for the asphalt, the emulsion can be applied to damp surfaces; in fact, dry surfaces should be dampened before applying the emulsion, for the obtaining of greatest bonding qualities. This is one of the chief advantages in an application of emulsion.

It was early appreciated that one emulsion could not serve as a "cure all" for every type of use. It has, therefore, been the policy of THE FLINTKOTE COMPANY to produce as great a variety of emulsion products as are required to meet to best advantage the conditions encountered. As a result of years of research, over twenty different emulsions are being manufactured in order to meet the increasing demand for specific performance and characteristics. THE FLINTKOTE COMPANY through its Engineering Service is therefore in position to offer unbiased advice regarding the best emulsion for use under any service conditions.



Southern California Edison Co. Dam at Florence Lake, Cal.
Over a mile long and 30 to 150 ft. high. Capacity 65,000 acre feet. 400,000 sq. ft. coated with Flintkote Asphalt Emulsion—C-13-HPC



Left:
Showing Protection Afforded by Cold Applied Flintkote Asphalt Emulsion and that of Same Asphalt Applied Hot on a Steel Plate and Exposed to the Weather for Two Years

CHARACTERISTICS AND USES OF A FEW OF OUR STANDARD PRODUCTS

Static Protective Coating (C-13-HPC)—Heavy Painting Consistency for Waterproofing, Dampproofing and Plaster Bonding—An asphalt emulsion of heavy painting consistency without fibers. It is used as a protective coating generally on all types of surfaces; for dampproofing and waterproofing; for gypsum plaster bonding on sidewalls (not ceilings) and similar work. It is not to be used for mastic work, except as a priming coat. This type of emulsion is either sprayed or brushed on, and contains 60% to 62% of asphalt, the highest possessed by any material of this type.

Static Roof Coating (C-13-C4)—Roof Coating Emulsion Containing Asbestos Fiber—A brush consistency fibered emulsion, used as a roof coating. For brush application only.

C-13-A—Heavy Fibered Mastic for Extreme Waterproofing and Insulation Protection—A heavy plastic consistency emulsion to which has been added long fibered asbestos. Usually applied with a trowel.

Used for insulation protection, and for pointing up in waterproofing jobs. Should be used only over a priming or bonding coat of C-13-HPC.



Johns-Manville



**BONDED
BUILT-UP
ROOFS**

JOHNS-MANVILLE
JM
PRODUCTS



FOR 78 years, Johns-Manville has been mining and manufacturing products from asbestos, steadily acquiring, through those years, a reputation for quality . . . quality based not only upon exceptional facilities for securing the highest grades of raw material . . . as one would expect from the largest asbestos mine in the world . . . but also the quality which results from years of research and experience in fabricating asbestos in its eleven huge factories throughout the United States.

For sixty of those 78 years, Johns-Manville has combined the facilities of a great mine with the expert knowledge and skill of a large manufacturer in the making of asbestos roofings, controlling every step from mine to market, to the distinct advantage of every present or prospective user of a Johns-Manville Built-up Roof.

In the pages which follow are discussed the inherent qualities which make a roof dependable, long-lived and fire-resistant, and the lasting benefits which will accrue from the use of proper materials, properly applied.

JOHNS-MANVILLE BONDED BUILT-UP ROOFS

Realizing that no one type of built-up roof can be acceptable or usable under all conditions, and recognizing the factor of individual preference, Johns-Manville has developed a number of different types of built-up roofs and is in a position to furnish a roof to meet practically any condition or personal preference.

The various standard J-M Built-up Roofs are tabulated on pages 8 and 9, with ratings of the Underwriters' Laboratories, Inc., and are classified on the basis of the kind of felt and number of layers used in their construction.

Johns-Manville Smooth-Surfaced Asbestos Built-up Roofs

While Johns-Manville furnishes built-up roofs of every type, the smooth-surfaced asbestos roof is recommended as the one best designed to stand up under all conditions and to give complete trouble-free protection for the life of the building.

J-M Smooth-Surfaced Asbestos Built-up Roofs are the outcome of several decades of study and experience in producing durable, fireproof, weatherproof, lightweight roofs at a moderate cost. They are suitable for practically every type of industrial building, warehouse, office building, hotel, hospital and apartment house.

They are built up of alternating layers of asphalt-saturated asbestos felt and roofing asphalt.

J-M Asbestos Felts, with which J-M Bonded Asbestos Roofs are built up, will not support combustion even when impregnated and coated with asphalt. The Underwriters' Laboratories, Inc., give Class A ratings to both J-M Super Class A and Class A Asbestos Roofs. They are fire-resistant to the highest degree.

J-M Bonded Roofing Asphalt—a relatively recent development in asphalt processing which has proved to be far superior to ordinary asphalts—is used on all J-M Bonded Asbestos Roofs. Tests at the Johns-Manville Research Laboratories at Manville, N. J., have demonstrated that the unusual ability of J-M Bonded Asphalt to stand up under all conditions of service will add years to the life of a roof.

Other Types of J-M Bonded Roofs

In addition to asbestos roofs, Johns-Manville also supplies Combination Roofs, composed of a rag base felt and asbestos finishing felts, and a complete line of slag or gravel-surfaced roofs, employing tar-saturated asbestos felts, tar-saturated rag felts, or asphalt-saturated rag felts.

All these types of J-M Bonded Roofs are included in the tables on pages 8 and 9.

Approved Roofing Contractors

As the best results are obtained only when the proper roofing is correctly laid, Johns-Manville has appointed Approved Roofing Contractors throughout the country, basing these appointments on experience, integrity and financial responsibility.

Roof Inspection

Johns-Manville maintains a corps of inspectors whose services are available in connection with bonded built-up roofs. This service is required in connection with every roof which is to be bonded and is rendered before, during, and after application.

Surety Roofing Bonds

All Johns-Manville Built-up Roofs of whatever type will, when desired, be covered by a bond of the National Surety Corp., guaranteeing the performance of the particular roof for a period of from ten to twenty years, depending on the type of roof applied. This bond is issued only on roofs laid by Johns-Manville Approved Roofing Contractors and in connection with Johns-Manville inspection service.

Where Johns-Manville Flashing Materials are used in conjunction with Johns-Manville Roofing, a flashing endorsement for a ten-year period will be attached to and become part of the bond, under the same conditions imposed for the bonding of the roof.



Johns-Manville recommends the smooth-surfaced asbestos roof as the best assurance of complete, trouble-free protection for the life of the building

8 7 Why a SMOOTH-SURFACED ASBESTOS ROOF

**provides the best
assurance of
roof permanence**

Since the primary purpose of a roof is permanent protection from the elements, it is obvious that a good roof must not only shed water, it must *stay* waterproof. And, for permanence, it must also be proof against fire and decay.

Scientific research has found no waterproofing agent better than asphalt, which has been proved to be less brittle at low temperatures and less fluid at high temperatures than any other known waterproofing material. Yet there are many kinds and grades of asphalt. In the effort to secure the permanence requisite in a good roofing asphalt, J-M research engineers have developed a processed asphalt known as J-M Bonded Roofing Asphalt, which has shown marked superiority over all other asphalts ordinarily used for such purpose.

4 J-M Bonded Roofing Asphalt

In a series of scientific tests by machine weathering, the J-M Laboratories subjected samples of Bonded Roofing Asphalt and other commercial asphalts to alternating cycles of exposure to heat, rain and sub-zero temperature, equivalent to ten years of actual service. Although the samples



After water spray, arc light and refrigeration, representing rain, heat and cold, were played on these three samples of roofing asphalts, for the equivalent of 10 years of actual weathering, J-M Bonded Roofing Asphalt (right) was still as good as new

had practically similar appearance before testing, the illustration above shows how Bonded Roofing Asphalt stood up when the others failed. It is this unusual permanence which qualifies J-M Bonded Roofing Asphalt as the satisfactory waterproofing agent in J-M Bonded Built-up Roofs.

However, even the best asphalt cannot, alone, make a good roof. There must be a flexible reinforcement, durable and non-combustible, which can itself be impregnated with



Asbestos—fibres of stone—fire-proof, rot-proof, enduring—the base of a good built-up roof. Crude asbestos fibres are here shown still attached to the serpentine rock matrix

asphalt to keep it waterproof, and which at the same time will protect the asphalt from its one cause of deterioration—the drying-out action of the sun. Asbestos felt meets these requirements exactly.

How Asbestos Felt preserves the waterproofing asphalt

The characteristic difference between asbestos fibre and all other natural fibres is that asbestos fibre is a solid filament, not a hollow tube. There can be no capillary action through it. This makes asbestos felt highly difficult to impregnate, since the waterproofing must be forced between and around the fibres, coating them and filling all the interstices, rather than their soaking it up with the blotter-like effect of organic fibres.

But this very lack of capillary action and consequent resistance to impregnation is the source of the great protection which asbestos felt affords the vital waterproofing asphalt, once the felt is impregnated with it. The essential oils of the asphalt are protected from evaporation due to the continuous drying-out action of the sun, which so rapidly deteriorates other types of roofing, and the asbestos built-up roof *stays* waterproof. The accompanying diagram of the security afforded by asbestos felt is self-explanatory.

When the asbestos felt has been impregnated with J-M Bonded Roofing Asphalt, and Bonded Roofing Asphalt used as the cementing layer between the plies of felt forming

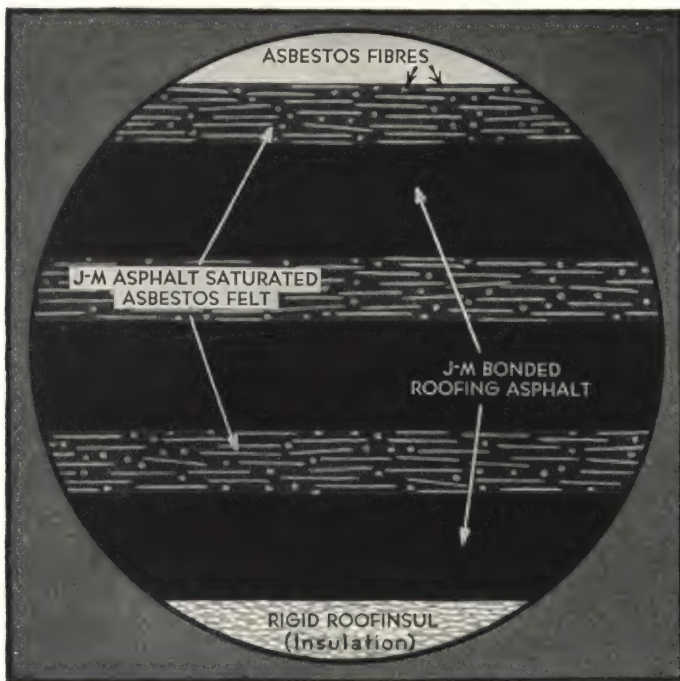
the built-up roof, the asphalt is preserved in practically its original condition. The result is a smooth-surfaced roof that *stays* waterproof for years with minimum upkeep.

Proof against fire or decay

But asbestos does more than merely protect from weather. Asbestos is fire-proof and rot-proof and thus adds the other two essentials to roof permanence. Its very existence—in the oldest igneous rocks—proves its endurance against the destructive forces of fire, time and the elements.

Asbestos felt is virtually felted fibres of stone. It cannot decay; it will not burn. Exhaustive tests by The Underwriters' Laboratories, which included exposure to radiant heat, burning brands and direct flame, have proved that asbestos felt, even when impregnated and coated with asphalt, as used in a J-M Built-up Roof, will not support combustion. J-M Super Class A and Class A Asbestos Roofs are so fire-resistant that they carry the Underwriters' Class A rating, which takes the base rate of insurance.

The attitude of insurance authorities toward any building material is of special interest, not alone because it serves as a reliable index to the fire-resistance of the material and consequent favorable insurance rates, but also, by logical inference, it is a recognition of the permanence of the material in question. Thus their highest rating accorded a J-M Smooth-surfaced Asbestos Roof is additional assurance of roof permanence.

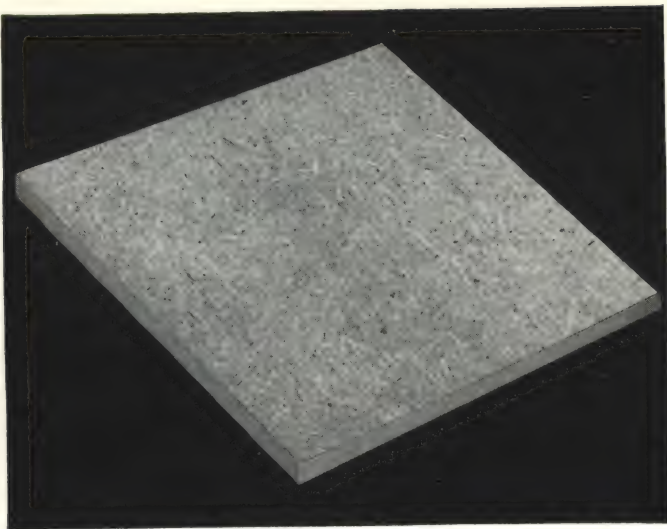


The diagram at the left shows a magnified edge of a 3-ply asbestos roof. Notice how the individual fibres of asbestos felt protect the impregnating asphalt from the sun, and how each ply of asbestos roofing felt acts as a protective blanket to the underlying layer of waterproofing asphalt

Right:

If you scrape the gray surface of an asbestos roof with a pen-knife the black asphalt appears below. You can repeat this test a dozen times in the same spot and will obtain the same results





Efficient, strong J-M Rigid Roofinsul, especially designed for insulating roofs of industrial, commercial and institutional buildings

HEAT LOSSES FOR INSULATED AND UNINSULATED ROOF CONSTRUCTIONS

Type of Roof	Thickness of J-M Rigid Roofinsul	Heat Loss in B. t. u. per sq. ft., per deg. F. temperature difference, per hour
7/8" wood deck and smooth-surfaced built-up roof	None	.533
	1/2"	.296
	1"	.205
	1 1/2"	.157
	2"	.127
1 5/8" wood deck and smooth-surfaced built-up roof	None	.381
	1/2"	.242
	1"	.178
	1 1/2"	.140
	2"	.116
4" concrete and smooth-surfaced built-up roof	None	.676
	1/2"	.336
	1"	.223
	1 1/2"	.167
	2"	.134
5" concrete and smooth-surfaced built-up roof	None	.625
	1/2"	.323
	1"	.217
	1 1/2"	.164
	2"	.132

6 GOOD REASONS FOR AN INSULATED ROOF

J-M Rigid Roofinsul

- Prevents condensation and roof drip
- Protects the deck against rot and corrosion
- Prevents damage to roofing felts through deck movement
- Provides closer interior temperature control
- Improves working conditions
- Saves fuel

Insulation on industrial, commercial and institutional buildings is rapidly gaining acceptance as a decidedly economical investment.

In connection with its Bonded Built-up Roofs, Johns-Manville recommends insulation with J-M Rigid Roofinsul for the following reasons:

First: It prevents condensation on the under side of the deck and eliminates discoloration of ceilings and the annoyance and damage caused by roof drip.

Regardless of how carefully a wood deck may be constructed, vapors penetrate the planking, condense on the underside of the built-up roof and rot starts at the top, unseen, and works down. While the problem of rot can be eliminated by the use of concrete, that of condensation and roof-drip remains.

When air comes in contact with a cooler surface, such as the underside of a roof, its temperature is lowered. If the temperature of the surface is below the dew point of the

6



Moisture condensation and the resultant decay made the removal of these old wood decks imperative. J-M Rigid Roofinsul would have prevented this expense



Applying J-M Rigid Roofinsul in three $\frac{1}{2}$ " layers. Roof insulation not only saves fuel and assures comfortable interior temperatures, but also protects both the roof deck and the built-up roof

water vapor in the air, the excess moisture is deposited on the surface as condensation. Insulation of the proper thickness will keep the temperature of the surface above the dew point and prevent the deposition of moisture.

Second: By preventing condensation, it protects the deck against rot and corrosion. When the deck is of concrete or other non-combustible material, J-M Rigid Roofinsul reduces the danger of cracking (commonly caused by sudden temperature changes) and thereby tends to prevent moisture from reaching the reinforcing steel members.

Third: It provides protection to the roofing felts themselves. All roof decks move to some extent under temperature changes. When this cycle of alternate expansion and contraction continues over a long period of time, any cracks in the deck may eventually be transmitted to the built-up roof unless there is an intervening layer of insulation. J-M Rigid Roofinsul not only minimizes movement of the deck by keeping its temperature more uniform, but also provides sufficient resiliency to take up strains due to any movement which does occur and prevent their transmission to the felts, thus prolonging the life of the roof.

Fourth: It permits closer control over interior temperatures both in summer and winter, assuring more comfortable, uniform working conditions throughout the year. Uniform interior temperatures are also a vital necessity in the operation of many modern industrial processes.

Fifth: It effectively retards the passage of heat through the roofs, thus saving on fuel and air conditioning bills. See table on opposite page.

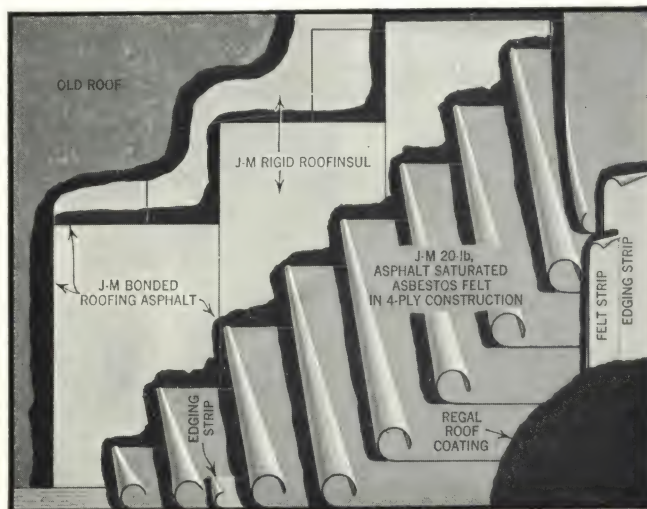
Sixth: On new construction, it makes it possible to reduce appreciably the investment in heating and air conditioning equipment.

J-M RIGID ROOFINSUL

J-M Rigid Roofinsul was designed especially for use as insulation over roof decks, principally under J-M Bonded Asbestos Built-up Roofs. It is light in weight and has a high insulating value, and is also rigid and structurally strong. J-M Rigid Roofinsul has a high resistance to moisture absorption. It lasts for years in the open and, when covered with a J-M Bonded Asbestos Roof, will last as long as the roof itself.

Any desired number of layers of J-M Rigid Roofinsul can be installed to give any needed insulating efficiency, without adding appreciably to the weight of the roof.

J-M Rigid Roofinsul is furnished 24" x 48". The standard thickness is $\frac{1}{2}$ ". If sheets of greater thickness than $\frac{1}{2}$ " are desired, two or more sheets are stapled together with a $\frac{3}{4}$ " ship-lap joint on all four edges. Weight approximately 0.8 lb. per sq. ft., $\frac{1}{2}$ " thick.



J-M 4-ply Asbestos Roof applied on old roof over insulation. Specifications Nos. 104, 105 or 108 (see tables). Bonded for 20 years

CONDENSED SPECIFICATIONS FOR J-M BONDED BUILT-UP ROOFS

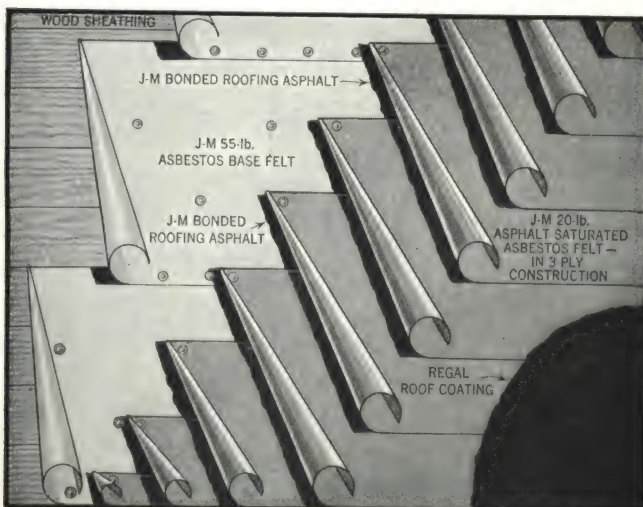
Over Wood Decks

PITCH OF ROOF INCHES PER FOOT	•20-YEAR ROOFS•					•15-YEAR ROOFS•					•10-YEAR ROOFS•				
	SURFACE	UNDERWRITER'S RATING	J-M DESIGNATION	J-M SPECIFICATION No.	MATERIALS (WEIGHTS GIVEN PER 100 SQUARE FEET)	SURFACE	UNDERWRITER'S RATING	J-M DESIGNATION	J-M SPECIFICATION No.	MATERIALS (WEIGHTS GIVEN PER 100 SQUARE FEET)	SURFACE	UNDERWRITER'S RATING	J-M DESIGNATION	J-M SPECIFICATION No.	MATERIALS (WEIGHTS GIVEN PER 100 SQUARE FEET)
1/4 To 9	SMOOTH	A	SUPER CLASS A	100	ONE 55-lb. ASPH.-SAT. ASBESTOS FELT THREE 20-lb. " " ASBESTOS FELTS 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH	A	CLASS A	103	ONE 55-lb. ASPH.-SAT. ASBESTOS FELT TWO 20-lb. " " ASBESTOS FELTS 60 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH		COMBINATION 30	202	ONE 30-lb. ASPH.-SAT. RAG FELT TWO 20-lb. " " ASBESTOS FELTS 60 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)
	SMOOTH		COMBINATION 345	205	ONE 50-lb. ASPH.-SAT. RAG FELT THREE 20-lb. " " ASBESTOS FELTS 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH		COMBINATION 45	200	ONE 50-lb. ASPH.-SAT. RAG FELT TWO 20-lb. " " ASBESTOS FELTS 60 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)					
	SMOOTH (OVER INSULATION)	A	4-A-1	104	OVER J-M RIGID ROOFINSUL: FOUR 20-lb. ASPH.-SAT. ASBESTOS FELTS 120 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH (OVER INSULATION)	B	3-A-1	106	OVER J-M RIGID ROOFINSUL: THREE 20-lb. ASPH.-SAT. ASBESTOS FELTS 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)					
4 To 9											CRUSHED SLATE	C	SLATEKOTE	400	TWO 15-lb. ASPH.-SAT. RAG FELTS TWO 50-lb. " " SLATEKOTE FELTS 60 lbs. BONDED ASPHALT (HOT)
2 To 6											SLAG		5-TWS	601	ONE PLY ROSIN-SIZED PAPER FIVE 15-lb. TAR-SAT. ASBESTOS FELTS 60 lbs. BONDED PITCH (IN-BETWEEN MOPPING) 45 lbs. BONDED ASPHALT (TO EMBED SLAG) 250 lbs. SLAG
											SLAG (OVER INSULATION)		4-TIWS	610	OVER J-M RIGID ROOFINSUL: FOUR 15-lb. TAR-SAT. ASBESTOS FELTS 105 lbs. BONDED PITCH (IN-BETWEEN MOPPING) 45 lbs. BONDED ASPHALT (TO EMBED SLAG) 250 lbs. SLAG
1 To 4											CRUSHED SLATE	C	SLATEKOTE	402	THREE 15-lb. ASPH.-SAT. RAG FELTS TWO 50-lb. " " SLATEKOTE FELTS 120 lbs. BONDED ASPHALT (HOT)
2 To 4											SLAG	A*	5-W5	301	FIVE 15-lb. ASPH.-SAT. RAG FELTS 165 lbs. BONDED ASPHALT (HOT) 250 lbs. SLAG
1/4 To 2	GRAVEL OR SLAG	A	5-WF	300	FIVE 15-lb. ASPH.-SAT. RAG FELTS (TWO LAID DRY, THREE HOT-MOPPED) 160 lbs. BONDED ASPHALT (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG	GRAVEL OR SLAG	A	4-WF	304	FOUR 15-lb. ASPH.-SAT. RAG FELTS (TWO LAID DRY, TWO HOT-MOPPED) 130 lbs. BONDED ASPHALT (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG					
	GRAVEL OR SLAG		5-TWF	600	ONE PLY ROSIN-SIZED PAPER FIVE 15-lb. TAR-SAT. ASBESTOS FELTS (TWO LAID DRY, THREE HOT-MOPPED) 150 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG	GRAVEL OR SLAG	A	4-TWF	604	ONE PLY ROSIN-SIZED PAPER FOUR 15-lb. TAR-SAT. ASBESTOS FELTS (TWO LAID DRY, TWO HOT-MOPPED) 125 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG					
	GRAVEL OR SLAG (OVER INSULATION)		4-TIWF	606	OVER J-M RIGID ROOFINSUL: FOUR 15-lb. TAR-SAT. ASBESTOS FELTS 200 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG	GRAVEL OR SLAG (OVER INSULATION)	A	3-TIWF	608	OVER J-M RIGID ROOFINSUL: THREE 15-lb. TAR-SAT. ASBESTOS FELTS 175 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG	SMOOTH (FOR SPRAY DECKS)		CLASS A WITH FABRIC	110	FOR USE ON SPRAY DECKS: ONE 55-lb. ASPH.-SAT. ASBESTOS FELT ONE TYPE B " " FABRIC TWO 20-lb. " " ASBESTOS FELTS 115 lbs. BONDED ASPHALT (HOT)
1/4 To 1	SMOOTH (FOR USE UNDER LIGHT FOOT TRAFFIC)	A	SUPER CLASS AF	102	FOR USE UNDER LIGHT FOOT TRAFFIC: ONE 55-lb. ASPH.-SAT. ASBESTOS FELT THREE 20-lb. " " " " ONE 65-lb. EXTRA HEAVY FLEXSTONE FELT 120 lbs. BONDED ASPHALT (HOT)										

Over Pre-Cast Gypsum Decks

ROOF PITCH INCHES PER FOOT	GRAVEL OR SLAG	A	5-WF	300	SEE SPEC. No. ABOVE FOR MATERIALS	ROOF PITCH INCHES PER FOOT	GRAVEL OR SLAG	A	4-WF	304	SEE SPEC. No. ABOVE FOR MATERIALS	ROOF PITCH INCHES PER FOOT	SLAG	A*	5-W5	301	SEE SPEC. No. ABOVE FOR MATERIALS
1/4 To 2	GRAVEL OR SLAG		5-TWF	600	SEE SPEC. No. ABOVE FOR MATERIALS	1/4 To 2	GRAVEL OR SLAG		4-TWF	604	SEE SPEC. No. ABOVE FOR MATERIALS	4 To 9	CRUSHED SLATE	C	SLATEKOTE	400	"
	GRAVEL OR SLAG (OVER INSULATION)		4-TIWF	606	OVER J-M RIGID ROOFINSUL: SEE SPEC. No. ABOVE FOR MATERIALS		GRAVEL OR SLAG (OVER INSULATION)		3-TIWF	608	OVER J-M RIGID ROOFINSUL: SEE SPEC. No. ABOVE FOR MATERIALS	1 To 4	SLATE			402	"
												2 To 6	SLAG (OVER INSULATION)		5-TWS	601	"
															4-TIWS	610	OVER J-M RIGID ROOFINSUL: SEE SPEC. No. ABOVE FOR MATERIALS

* CLASS A UNDERWRITERS RATING ON PITCHES UP TO AND INCLUDING 3 INCHES PER FOOT



J-M Super Class A Asbestos Roof over Wood Deck
Specification No. 100. Bonded for 20 years

SPECIFICATIONS FOR ALL J-M ROOFS

Detailed Specifications

Complete and detailed individual specifications are available for every Johns-Manville Built-up Roof listed in the tables on this and the following page. Ask for individual specifications by number, or, where all specifications are desired, ask for "complete set of Architect's Specifications on J-M Bonded Built-up Roofs."

The following condensed specification, however, may be used in the absence of the standard specification, inserting the required items where indicated to complete.

Condensed Specification

Roofing—Shall be Johns-Manville, (*state Designation and Specification Number, see chart*) Built-up Roofing laid in accordance with the manufacturer's Standard Specification, applied by a J-M Approved Roofing Contractor.

CONDENSED SPECIFICATIONS FOR J-M BONDED BUILT-UP ROOFS Over Non-combustible Decks (Poured Concrete or Poured Gypsum)

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PITCH OF ROOF INCHES PER FOOT	•20-YEAR ROOFS•					•15-YEAR ROOFS•					•10-YEAR ROOFS•				
	SURFACE	UNDERWRITER'S RATING	J-M DESIGNATION	J-M SPECIFICATION No.	MATERIALS (WEIGHTS GIVEN PER 100 SQUARE FEET)	SURFACE	UNDERWRITER'S RATING	J-M DESIGNATION	J-M SPECIFICATION No.	MATERIALS (WEIGHTS GIVEN PER 100 SQUARE FEET)	SURFACE	UNDERWRITER'S RATING	J-M DESIGNATION	J-M SPECIFICATION No.	MATERIALS (WEIGHTS GIVEN PER 100 SQUARE FEET)
1/4 To 3/8	SMOOTH	A	CLASS A	101	ONE 55-lb. ASPH-SAT. ASBESTOS FELT TWO 20-lb. " " " " " " 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH	A	COMBINATION 45	201	ONE 50-lb. ASPH-SAT. RAG FELT TWO 20-lb. " " ASBESTOS FELTS 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH		COMBINATION 30	203	ONE 30-lb. ASPH-SAT. RAG FELT TWO 20-lb. " " ASBESTOS FELTS 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)
4 To 9	SMOOTH (OVER INSULATION)	A	4-A-1	105	OVER J-M RIGID ROOFINSUL: FOUR 20-lb. ASPH-SAT. ASBESTOS FELTS 120 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH (OVER INSULATION)	A	3-A-1	107	OVER J-M RIGID ROOFINSUL: THREE 20-lb. ASPH-SAT. ASBESTOS FELTS 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)					
2 To 6 OVER POURED GYPSUM 1 To 6 OVER OTHERS											CRUSHED SLATE	C	SLATEKOTE	401	ONE 15-lb. ASPH-SAT. RAG FELT TWO 50-lb. " " SLATEKOTE FELTS 90 lbs. BONDED ASPHALT (HOT)
1 OR 2 To 6											SLAG (OVER INSULATION)		4-TICS	611	OVER J-M RIGID ROOFINSUL: FOUR 15-lb. TAR-SAT. ASBESTOS FELTS 105 lbs. BONDED PITCH (IN-BETWEEN MIPPING) 45 lbs. BONDED ASPHALT (TO EMBED SLAG) 250 lbs. SLAG.
1 To 4											SLAG		4-TCS	603	FOUR 15-lb. TAR-SAT. ASBESTOS FELTS 65 lbs. BONDED PITCH (IN-BETWEEN MIPPING) 45 lbs. BONDED ASPHALT (TO EMBED SLAG) 250 lbs. SLAG.
2 To 4											CRUSHED SLATE	C	SLATEKOTE	403	THREE 15-lb. ASPH-SAT. RAG FELTS TWO 50-lb. " " SLATEKOTE FELTS 150 lbs. BONDED ASPHALT (HOT)
1/4 To 2	GRAVEL OR SLAG	A	4-CF	302	FOUR 15-lb. ASPH-SAT. RAG FELTS 190 lbs. BONDED ASPHALT (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG	GRAVEL OR SLAG	A	3-CF	305	THREE 15-lb. ASPH-SAT. RAG FELTS 160 lbs. BONDED ASPHALT (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG					
1/4 To 2											SMOOTH (FOR SPRAY DECKS)		CLASS A WITH FABRIC	III	FOR USE ON SPRAY DECKS: ONE 55-lb. ASPH-SAT. ASBESTOS FELT ONE TYPE B " " FABRIC TWO 20-lb. " " ASBESTOS FELTS 145 lbs. BONDED ASPHALT (HOT)
1/4 To 2 OVER POURED GYPSUM 1/4 To 1 OVER OTHERS	GRAVEL OR SLAG		4-TCF	602	FOUR 15-lb. TAR-SAT. ASBESTOS FELTS 200 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG	GRAVEL OR SLAG	A	3-TCF	605	THREE 15-lb. TAR-SAT. ASBESTOS FELTS 175 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG					
1/4 To 1	GRAVEL OR SLAG (OVER INSULATION)		4-TICF	607	OVER J-M RIGID ROOFINSUL: FOUR 15-lb. TAR-SAT. ASBESTOS FELTS 200 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG	GRAVEL OR SLAG (OVER INSULATION)	A	3-TICF	609	OVER J-M RIGID ROOFINSUL: THREE 15-lb. TAR-SAT. ASBESTOS FELTS 175 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG					
1/4 To 1	SMOOTH (FOR USE UNDER LIGHT FOOT TRAFFIC)	A	CLASS A F	102-A	FOR USE UNDER LIGHT FOOT TRAFFIC: ONE 55-lb. ASPH-SAT. ASBESTOS FELT TWO 20-lb. " " " " " " ONE 85-lb. EXTRA HEAVY FLEXSTONE FELT 120 lbs. BONDED ASPHALT (HOT)						SMOOTH (FOR USE UNDER PROMENADE TILE)		5-TCPF	612	FOR USE UNDER PROMENADE TILE: FIVE 15-lb. TAR-SAT. ASBESTOS FELTS (LAID TWO SHINGLED; TWO SHINGLED; AND ONE FINAL PLY) 200 lbs. BONDED PITCH (HOT)
1/4 To 1/2	SMOOTH (FOR USE UNDER PROMENADE TILE)	A	4-A-P	112	FOR USE UNDER PROMENADE TILE: TWO PLYS ROSIN-SIZED PAPER FOUR 20-lb. ASPH-SAT. ASBESTOS FELTS 160 lbs. BONDED ASPHALT (HOT)						SMOOTH (FOR USE UNDER PROMENADE TILE)		COMBINATION 45	204	FOR USE UNDER PROMENADE TILE: TWO PLYS ROSIN-SIZED PAPER ONE 50-lb. ASPH-SAT. RAG FELT TWO 20-lb. " " ASBESTOS FELTS 130 lbs. BONDED ASPHALT (HOT)
1/4 OR LESS	GRAVEL OR SLAG		4-TCL	613	FOUR 15-lb. TAR-SAT. ASBESTOS FELTS (LAID TWO SHINGLED AND TWO SHINGLED) 200 lbs. BONDED PITCH (HOT) 400 lbs. GRAVEL OR 300 lbs. SLAG						SMOOTH (FOR USE UNDER GRANOLITHIC FINISH)		SUPER CLASS A	114	FOR USE UNDER GRANOLITHIC FINISH: TWO PLYS ROSIN-SIZED PAPER ONE 55-lb. ASPH-SAT. ASBESTOS FELT THREE 20-lb. " " " " " " TWO PLYS ROSIN-SIZED PAPER 165 lbs. BONDED ASPHALT (HOT)

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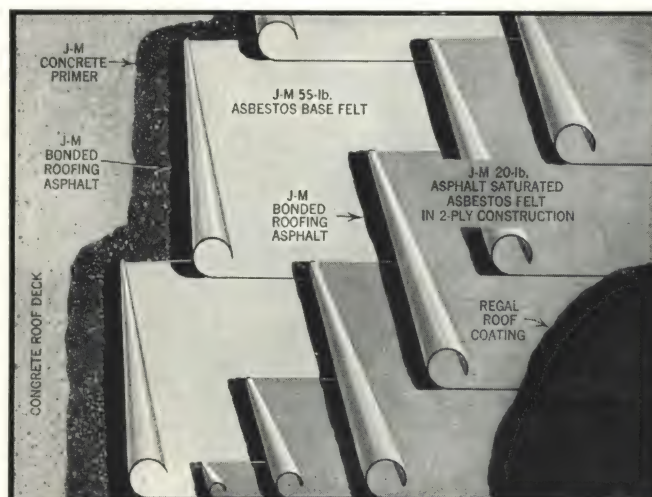
Over Steel Decks

1/2 To 9	SMOOTH	A	4-A-1	108	OVER J-M RIGID ROOFINSUL: FOUR 20-lb. ASPH-SAT. ASBESTOS FELTS 120 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)	SMOOTH	A	5-A-1	109	OVER J-M RIGID ROOFINSUL: THREE 20-lb. ASPH-SAT. ASBESTOS FELTS 90 lbs. BONDED ASPHALT (HOT) 8 lbs. REGAL ROOF COATING (COLD)					
* CLASS A UNDERWRITER'S RATING ON PITCHES UP TO AND INCLUDING 3 INCHES PER FOOT															

The roofing contractor shall furnish a J-M (state term) Surety Roofing Bond.

Flashing—Shall be Johns-Manville Flashing applied in accordance with the manufacturer's Standard Specification. It shall be applied on parapet walls (state whether "not less than 8 in. high" or "to extend full height and under coping" or "not less than 8 in. high with cap flashing extended through the wall"). It shall be applied on high walls (state whether "same height as on adjoining parapet walls" or "not less than 8 in. high with cap flashing extended through the wall." If flashing is to be carried into raggle blocks, so state.)

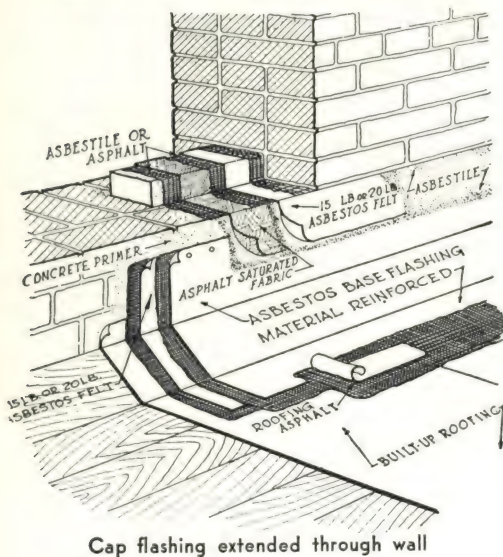
Roof Insulation—Shall be Johns-Manville Rigid Roofinsul (state thickness) thick applied in accordance with the manufacturer's Standard Specification. The insulation shall be underlaid with felt over the entire area.



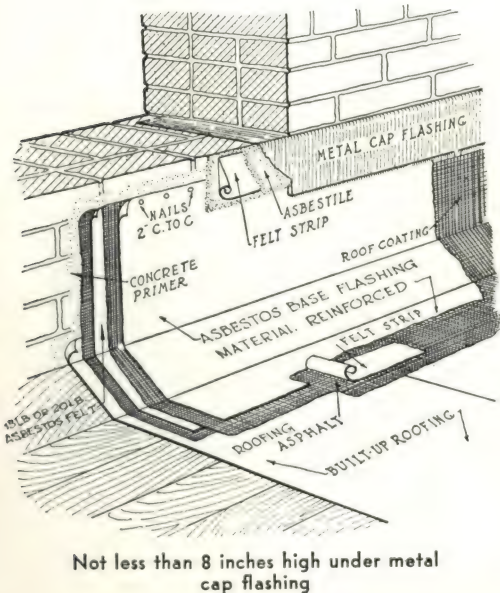
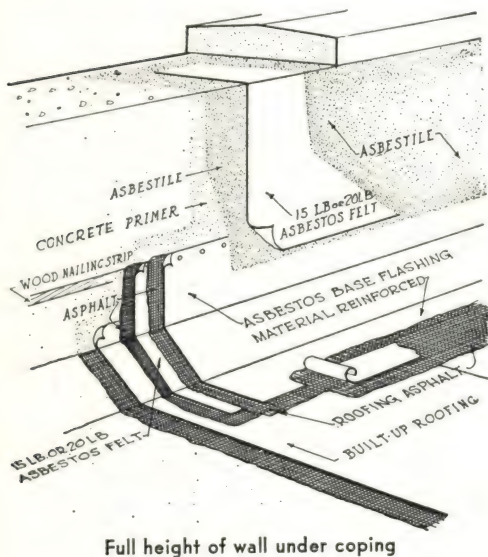
J-M Class A Asbestos Roof Over Non-combustible Deck
Specification No. 101. Bonded for 20 years

The Johns-Manville Asbestile System of Flashing

J-M BASE AND CAP FLASHING



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To protect the most critical areas of the roof, Johns-Manville has developed the Asbestile System of Flashing, a method that has proved effective not only in withstanding weather, but also in maintaining a waterproof joint despite the natural movement of the roof deck.

J-M Asbestile Flashing is bonded in place with J-M Asbestile, a mixture of asbestos fibre, high quality asphalt and a hardening agent. Asbestile will not sag. It is non-corrosive, rotproof and permanent. It becomes a component part of the wall, unaffected by expansion and contraction.

"Through-the-Wall" Flashing provides greater protection than any other known method

In "through-the-wall" flashing (illustrated at the top, left), asbestos flashing felts are applied to the wall in 2-ply construction embedded in Johns-Manville Bonded Roofing Asphalt, each layer nailed to the primed surface of the wall and brought out over the roofing felts.

The edges on the roof are reinforced by an additional felt strip, also embedded in Bonded Asphalt. The upper edges of the base flashing are protected by strips of asphalt-saturated fabric and asbestos felt running through the wall, over a key, and extending down over the base flashing. Each of these strips is embedded in J-M Asbestile and the top felt is coated with Asbestile. This construction forms a complete seal for the built-up roof at its junction with the wall.

Naturally there must be variations in flashing methods to meet varying constructions and different wall materials. In the case of a concrete parapet wall where it is impossible to go through the wall itself, the cap flashing is carried up over the concrete wall and under the coping. This method of flashing is shown in the center sketch at the left.

In cases where metal cap flashing is used, the Johns-Manville base flashing is installed as described above and the metal cap flashing should extend through the wall for adequate protection, as shown in the lower illustration.

The importance of flashing emphasizes the need for competent application

It is obvious that inferior or short-cut methods of flashing will weaken the entire roof from a waterproofing standpoint. This is another reason for the care taken in selecting Johns-Manville Approved Roofing Contractors. They are in position to give sound advice on the best method of flashing for the particular roof construction. They will apply the flashings in accordance with Johns-Manville recommendations, thus insuring a leakproof and fire-proof roof at every point on its entire area.

The Johns-Manville—Holorib Complete Roof Unit

- ROOF DECK
- INSULATION
- BUILT-UP ASBESTOS ROOF

All in One Unit Structure

One of the most outstanding developments in roof construction utilizing a steel deck is the Johns-Manville Insulated Roof over a Fenestra Holorib Steel Deck. Roof insulation, weatherproofing, fireproofing and a light-weight, strong, durable deck are combined in *one unit structure*.

Because it is of steel, the Holorib deck is inherently dry. The triangular rib construction not only provides rigidity, but materially reduces the amount of structural steel necessary to secure adequate strength. There is no appreciable expansion or contraction; nor can the deck warp or burn.

Bonded to this steel deck with J-M Roofing Asphalt, and further secured by expanding nails, is J-M Rigid Roofinsul, applied to the desired thickness. And over these insulating sheets is applied a fireproof, permanent Johns-Manville Asbestos Built-up Roof.

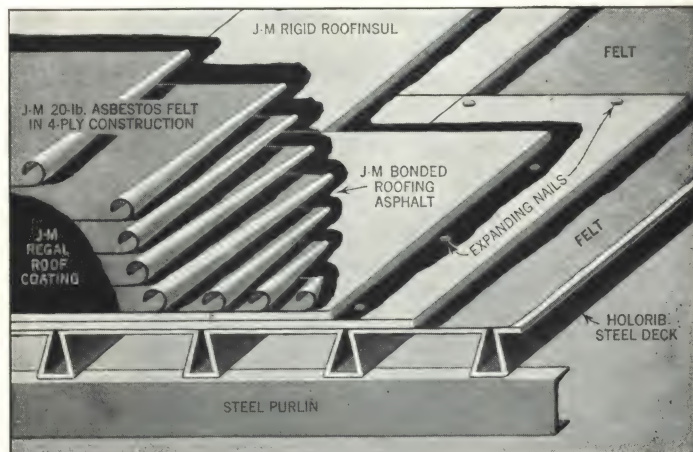
A Complete Roof Unit

Here is a roof that provides every quality that goes to make an ideal complete roof structure. The Holorib steel deck combines light weight and unusual strength and durability with an appreciable saving in structural steel requirements. J-M Rigid Roofinsul cuts down the initial cost

of heating equipment, prevents condensation and roof drip, and results in lower fuel bills, more uniform interior temperatures and comfortable working conditions. A J-M Asbestos Built-up Roof assures lasting protection against weather and the danger of roof-communicated fires.

But J-M Bonded Asbestos Roofs are not limited to Fenestra Holorib steel decks. They can be applied over any approved steel deck provided the pitch is at least $\frac{1}{2}$ in. to the foot and that at least one ply of half-inch thick J-M Rigid Roofinsul is first applied to the deck.

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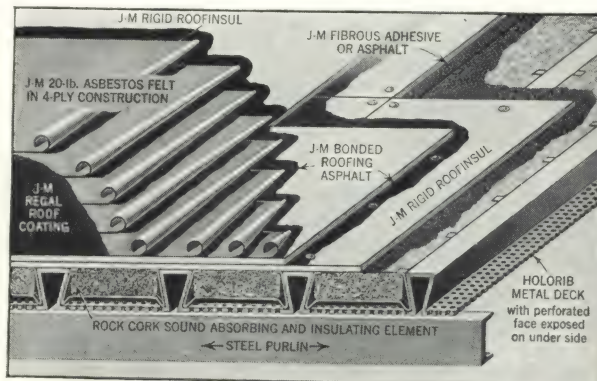
Illustrating the manner in which the Johns-Manville-Holorib Complete Roof Unit is constructed. For the sake of clarity, the Holorib deck has been exaggerated in size

In a Johns-Manville SANACOUSTIC-HOLORIB ROOF are combined Ceiling, Acoustical Treatment, Roof Deck, Insulation and Waterproofing

In this type of J-M Roof, the under side of the roof slab forms the ceiling surface of the interior. This consists of sheets of perforated and enameled Holorib metal, securely fastened to the purlins. The enamel surface provides a pleasing, attractive ceiling and helps to reflect diffused light rays. The perforations are unnoticeable except on close examination.

Above these perforated sheets, J-M Rock Cork is installed as the sound-absorbing medium. Sound waves pass through the perforations in the Holorib and are absorbed by the acoustical treatment. By absorbing the major part of sounds produced in the interior, J-M Acoustical Treatment lowers the noise level to a point where it is not detrimental to health, comfort or efficiency.

Over the deck, J-M Rigid Roofinsul and a J-M Bonded Asbestos Built-up Roof are applied.



This diagram shows how the Holorib deck, when inverted and perforated, serves as the ceiling. The Rock Cork provides sound absorption and insulation. Over these materials are then applied J-M Rigid Roofinsul and a J-M Asbestos Built-up Roof



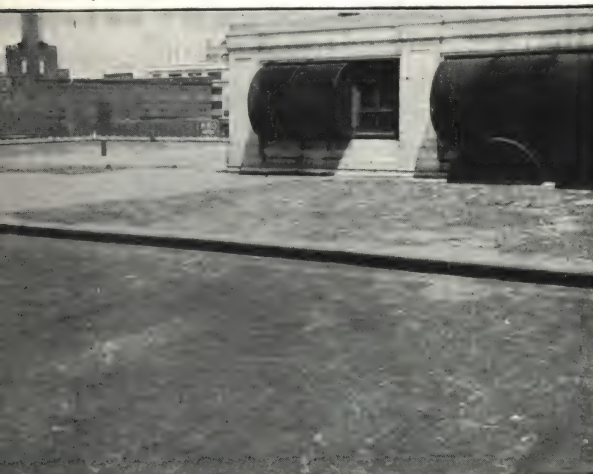
25 Years "Old" at South Bend, Ind.

This J-M smooth-surfaced asbestos roof has been protecting the Oliver Farm Equipment Company factory for a full quarter of a century.



22 Years "Old" at Chicago, Ill.

This J-M asbestos roof was laid in 1913 for Reid, Murdock & Company, 325 No. LaSalle St. The roof has given very satisfactory service.



23 Years "Old" at Kansas City, Mo.

In 1912 this J-M roof was applied on the building of the Kansas City Star. Says the owner, "Certain portions are subjected to foot traffic but it has given excellent service with practically no cost for repairs or maintenance."

20 Years "Old" at Watertown, N. Y.

(At right) Bagley and Sewall Company report that their J-M smooth-surfaced asbestos roofs appear to be in condition to last many years longer.

These Johns-Manville 20 years "old" and

The performance of Johns-Manville Smooth-surfaced Asbestos Built-up Roofs is a record of which to be proud. Here are photographs which were taken in 1935 of a few of such roofs . . . every one of which has had a service life of 20 years or longer . . . and all are still in good condition.

Note the pleasing gray appearance of the roofs. As has been explained on page 5, this gray surface is the topmost layer of the asbestos fibres in the asbestos felt which blankets the vital waterproofing asphalt and protects it from the deteriorating action of the sun.

In addition to the roofs illustrated, among the many other Johns-Manville roofs with service records of 20 years or more, are the following typical examples:

35 YEARS "OLD"

At Newark, N. J.

Building No. 4 of General Leather Company. Says Chief Engineer Krill, "During that entire period it has not required any maintenance whatever."

23 YEARS "OLD"

At Seattle, Wash.

J-M Smooth-surfaced Asbestos Roof was applied for the O.W.R.R. & N. Co., Argo Machine Shop, in September, 1912. Still in splendid condition.

At Detroit, Mich.

Detroit Baseball Company reports, "Your asbestos roofs were installed in 1912 on right and left field pavillions at Navin Park. They have withstood weather and the added punishment of thousands of baseballs striking them. The material appears in good condition."

At Louisville, Ky.

American Medicinal Spirits Company writes, "The performance more than speaks for itself."



Built-up Roofs are *still in their prime!*

22 YEARS "OLD"

At Seattle, Wash.

The roof of the Bell Street Dock, Port of Seattle, is still in good condition, although it was applied as long ago as 1913.

At Bluefield, W. Va.

Huff, Andrews and Thomas Company write about their J-M roof, "Except for some shovel cuts caused by the removal of snow last winter, it is in excellent condition . . . Overhead expense has been reduced to a minimum . . . Anticipate many more years of service on this roof."

At Chicago, Ill.

Sears, Roebuck & Co. (Grocery Building) report two 22-year old J-M asbestos roofs "in good condition."

At Los Angeles, Cal.

Agent for Brockman Building reports "repairs to J-M roofs have probably not exceeded \$10 during all this time." Roof applied November 29, 1913.

21 YEARS "OLD"

At Seattle, Wash.

The world war had just started when a J-M roof was applied on the Lincoln High School in Seattle. The asbestos felts are in splendid shape today.

At Los Angeles, Cal.

New Method Laundry states their J-M roof "has given continuous service and is still in excellent condition."

20 YEARS "OLD"

At Los Angeles, Cal.

(In circle) On March 4, 1915, this J-M roof was laid on the warehouse of the Hauser Packing Company. "Good for many more years of service."



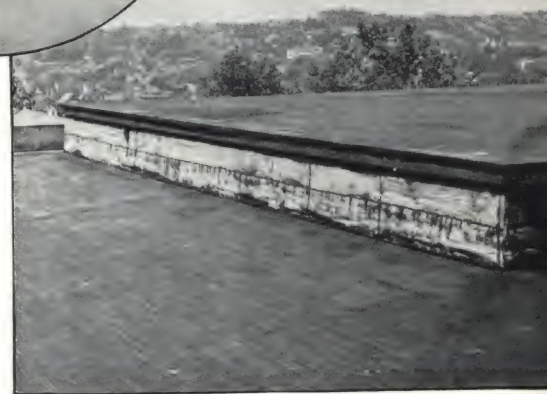
20 Years "Old" at Beach Grove, Ind.

In 1910 the Big Four Railroad bought a J-M smooth-surfaced asbestos roof for their Coach Shop. The photograph shows that it is still in good condition and will undoubtedly give many more years of satisfactory service.



22 Years "Old" at Detroit

In 1913 a J-M asbestos roof was laid for the Enterprise Foundry Company. In 1935 they state, "This roof looks good for many more years."



20 Years "Old" at Seattle, Wash.

Meany Hall, University of Washington, is protected by this J-M smooth-surfaced asbestos roof. In good condition after 20 years.

24 Years "Old" at Cincinnati, Ohio

(At left) "Nearly a quarter of a century," says the American Valve and Meter Company of their J-M smooth-surfaced asbestos roof.



OTHER JOHNS-MANVILLE PRODUCTS

Elsewhere in this and in other sections of Sweet's Catalog File—Architectural, will be found details concerning additional Johns-Manville products. Please consult the sections as noted, for the following:

Steeltex Floor Lath for concrete floors and roofs	SECTION 3
Welded Wire Reinforcement for concrete construction	
Asbestos and Asphalt Roofing and Siding Shingles	SECTION 8
Corrugated Transite Industrial Roofing and Siding	
Flat Transite Sheets	
Transite Ventilators	
Acoustical and Sound Control Treatments	SECTION 13
Decorative Insulating Board and Hard Board	
Insulating Board and Lath	
Insulations for heating, plumbing, refrigerating and air-conditioning systems	
Rock Wool Home Insulation	
Steeltex for Plaster, Stucco and Brick or Stone Veneer	SECTION 14
Asbestos Flexboard and Asbestos Wainscoting	SECTION 15
Asphalt Tile Flooring	
Transite Walls and Partitions	SECTION 20

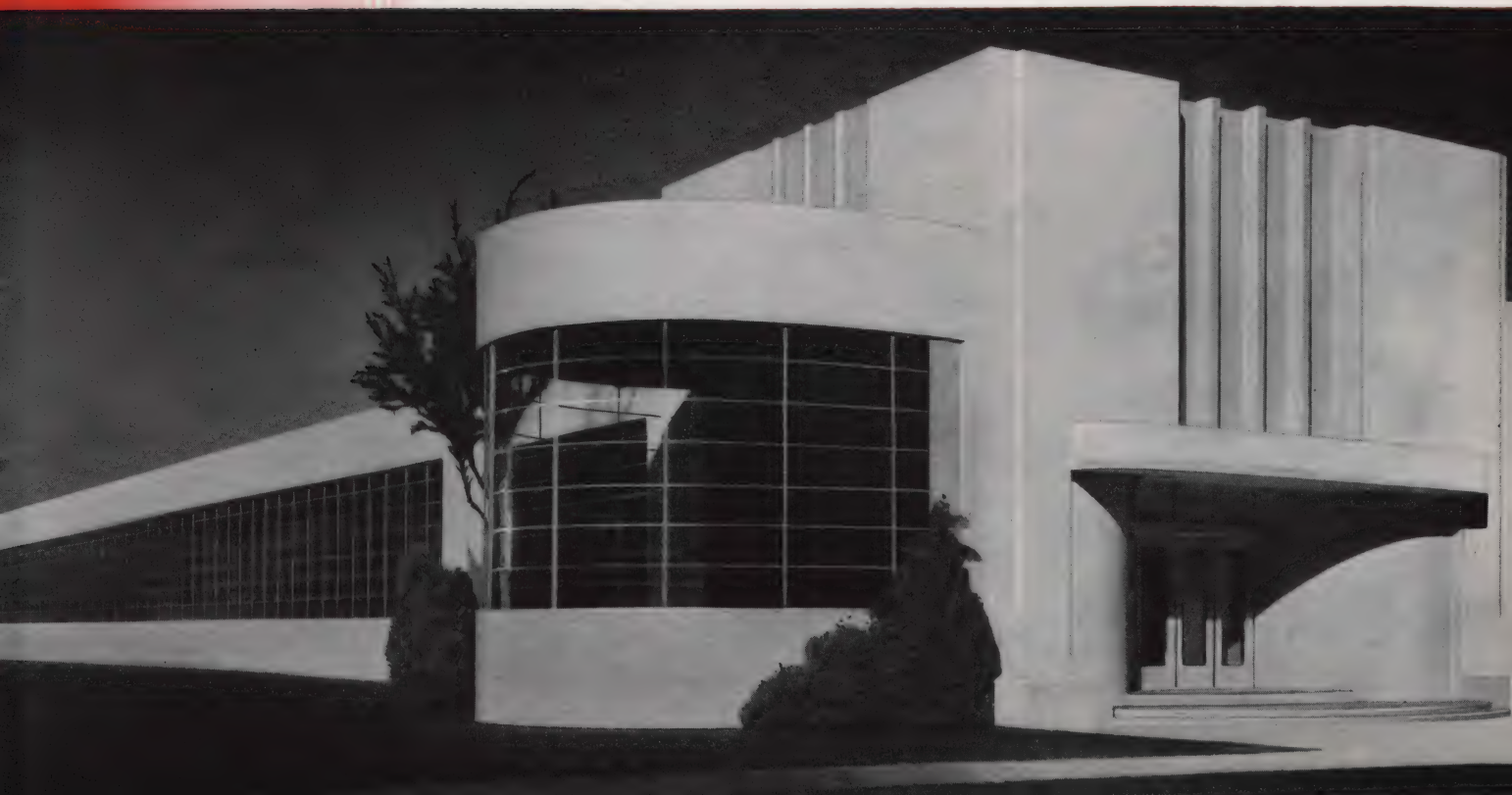
Complete information, specifications and application details on these and all other Johns-Manville products will gladly be furnished upon application. Communicate with the address below or with the nearest Johns-Manville office.

JOHNS-MANVILLE
22 East 40th Street
New York, N. Y.



KOPPERS

**BUILT-UP
ROOFING
FLASHING
DAMP PROOFING
WATERPROOFING
TAR-BASE PAINTS**



THE ADVANTAGES OF THE FLAT DECK ROOFS

Flat roof decks are economical to construct and maintain and they are particularly useful on two or three-story buildings erected on foundations designed to carry additional stories. They are usually more pleasing architecturally; they often permit better ventilation and they make possible the high and low bay type of construction which delivers better light in industrial buildings.

THE ADVANTAGES OF COAL TAR PITCH FOR FLAT ROOFS

Two important questions should be asked about any roofing to be applied on flat decks:

1. Can it resist prolonged contact with water without deteriorating?
2. Does it have the ability to heal itself automatically?

Roofs built with KOPPERS Coal Tar Pitch **do** resist water and they **do** heal themselves.

1. RESISTANCE TO WATER. Prolonged contact with water is a condition almost impossible to avoid on flat roofs. Poor drainage, low spots, or settlement of the building may cause it. Service records of 15 to 50 years by coal tar pitch roofs with little or no attention prove the resistance of tar to water. KOPPERS Coal Tar Pitch is practically insoluble in water. None of its constituents has more than a slight water solubility. It contains no added fillers that would induce water absorption or emulsification.

2. THE SELF-HEALING PROPERTY. Settlement of a building, warping of timbers and many other things can cause cracks in a roof. However, the vital consideration is whether these cracks are permanent if they do appear. Coal tar pitch has a property technically known as "cold flow" and even at ordinary temperatures a crack heals itself. This can clearly be seen in photomicrographs which show the sides of the cracks moving slowly together until complete fusion takes place and the pitch again forms a continuous layer. Coal tar pitch roofs readily conform to slight irregularities in the deck and yet remain waterproof.

THE EXTRA-HEAVY TOP POURING. Additional protection is given a KOPPERS Roof by the extra-heavy top pouring of roofing pitch. This amounts to approximately 70 pounds for pitch for every 100 square feet of roof surface.

THE GRAVEL OR SLAG SURFACE. The gravel or slag surface on a KOPPERS Roof provides an armor against hail, driving rain, sleet and snow. It also provides additional wearing surface which protects the roof against foot traffic. Roofs with gravel or slag surfaces cling to the deck even in severe wind storms.

THE EXTRA SATURATION OF THE FELT. The tarred felt used in KOPPERS Roofs absorbs one and one-half times its own weight of coal tar pitch during saturation. This large proportion of saturant insures high strength and maximum durability.

PRESERVATIVE AND NON-CORROSIVE ACTION. KOPPERS Old Style Pitch contains coal tar creosote, which is unsurpassed as a preservative for wood, felt or other materials which are used in roofing construction. It contains no mineral acids, alkalies, or corrosive substances and therefore cannot corrode metal surfaces with which it may come in contact.

MATERIALS SPECIFICATIONS

KOPPERS Old Style Pitch complies with the following standard specifications:

U. S. Government Master Specifications R. P-381 (Federal Specifications Board)—"Coal Tar Pitch for Roofing,"

A. S. T. M. D-252-27—"High Bitumen Coal Tar Pitch for Use in Constructing Built-up Roofs Surfaced with Slag or Gravel."

Underwriters' Laboratories.

KOPPERS Approved Tarred Felt meets the following specifications:

The Underwriters' Laboratories.

Federal Specifications No. HH-F-201 and A. S. T. M. D-227-27.

WEIGHTS, CONTAINERS, ETC. KOPPERS Old Style Pitch is sold in barrels or metal containers, 450 to 500 lbs.

KOPPERS Tarred Felts are sold in standard size rolls, 32 inches wide and containing 432 square feet, except when otherwise specified. KOPPERS Approved Tarred Felt, the highest grade of roofing and waterproofing felt and the grade used in KOPPERS Bonded Roofs, has an approximate average weight of 15 lbs. per 100 sq. ft., or 65 lbs. per roll.

BOND. Maintenance Bonds on KOPPERS Roofing and Flashings are issued by the Koppers Products Company and the National Surety Corporation on roofs constructed according to Koppers specifications and when applied by roofing contractors approved in writing by the Koppers Products Company. When KOPPERS Bonded Roofing with KOPPERS Bonded Flashings are specified, this company will have an inspector on the job to see that it is constructed according to the specifications. The bond protects the building owner against any roofing maintenance expense due to leakage for the period of the bond. It is issued for 10, 15 or 20 years.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

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KOPPERS 20-YEAR ROOFING SPECIFICATION No. 1

5-Ply Over Wood Decks
[Maximum Incline Two (2) Inches Per Foot]

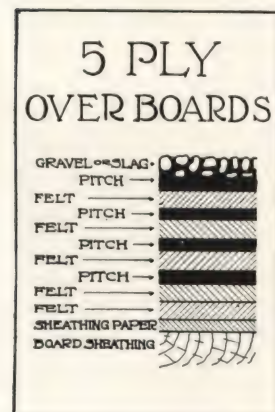
BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS Twenty Year Type, Specification No. 1, 5-Ply Over Boards.

(When Bond is required add the following sentence.) A KOPPERS 20-Year Guarantee Bond shall be furnished by the Roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be clean, smooth and free from knot holes, large cracks, and loose boards. The lumber shall be seasoned or treated. If the roof deck is inclined it shall be properly sloped to the outlets.



APPLICATION. First—Lay one (1) thickness of KOPPERS sheathing paper, weighing not less than five (5) pounds per one hundred (100) square feet, lapping each sheet one (1) inch over the preceding sheet.

Second—Lay over the entire surface two (2) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet. Nail as often as necessary to hold the sheets in place and until the remaining felt is laid.

Third—Apply over the entire surface a uniform coating of KOPPERS Old Style Pitch.

Fourth—Lay over the entire surface three (3) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-two (22) inches over the preceding sheet and mopping with KOPPERS Old Style Pitch the full width of the twenty-two (22) inch lap, so that in no place shall felt touch felt. Each sheet shall be nailed not less than two (2) inches from the upper edge, nails to be spaced not more than two (2) feet apart. All nails shall be covered by not less than two (2) plies of KOPPERS Approved Tarred Felt.

Fifth—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

GENERAL. All tarred felt shall be laid without wrinkles or buckles. Nailing of all felt shall be done with simplex flat head roofing nails or with seven-eighths ($\frac{7}{8}$) inch galvanized roof nails driven through flat tin discs.

For each one hundred (100) square feet of completed roofing surface there shall be used not less than one hundred and fifty (150) pounds of KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 20-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent on request.

KOPPERS 15-YEAR ROOFING SPECIFICATION No. 2

4-Ply Over Wood Decks
[Maximum Incline Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 15-Year Type, Specification No. 2, 4-Ply Over Boards.

(When Bond is required add the following sentence.) A KOPPERS 15-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be clean, smooth and free from knot holes, large cracks and loose boards. The lumber shall be seasoned or treated. If the roof deck is inclined it shall be properly sloped to the outlets.

APPLICATION. First—Lay one (1) thickness of KOPPERS sheathing paper, weighing not less than five (5) pounds per one hundred (100) square feet, lapping each sheet one (1) inch over the preceding sheet.

Second—Lay over the entire surface two (2) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet. Nail as often as necessary to hold the sheets in place and until the remaining felt is laid.

Third—Apply over the entire surface a uniform coating of KOPPERS Old Style Pitch.

Fourth—Lay over the entire surface two (2) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet and mopping with KOPPERS Old Style Pitch the full width of the seventeen (17) inch lap, so that in no place shall felt touch felt. Each sheet shall be nailed not less than two (2) inches from the upper edge, nails to be spaced not more than two (2) feet apart.

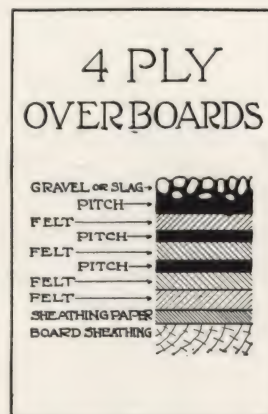
Fifth—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

GENERAL. All tarred felt shall be laid without wrinkles or buckles. Nailing of all felt shall be done with simplex flat head roofing nails or with seven-eighths ($\frac{7}{8}$) inch galvanized roof nails driven through flat tin discs.

For each one hundred (100) square feet of complete roofing surface there shall be used not less than one hundred and twenty-five (125) pounds of KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 15-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent on request.



KOPPERS 10-YEAR STEEP ROOFING SPECIFICATION No. 3

5-Ply Over Wood Decks [Maximum Incline Four (4) Inches
Per Foot and Not Less Than Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 10-Year Steep Type Specification No. 3, 5-Ply Over Boards.

(When Bond is required add the following sentence.) A KOPPERS 10-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be clean, smooth, firm and free from knot holes, large cracks and loose boards. The lumber shall be seasoned or treated. The inclines of the roof deck shall not be more than four (4) inches and not less than two (2) inches to the foot.

APPLICATION. First—Lay one (1) thickness of KOPPERS sheathing paper, weighing not less than five (5) pounds per one hundred (100) square feet, lapping each sheet one (1) inch over the preceding sheet.

Second—Lay over the entire surface five (5) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-six (26) inches over the preceding sheet. The felt shall be laid across and not up and down the slope of the roof. Nail each sheet with one (1) inch barbed roofing nails through flat tin discs ten (10) inches from the upper edge. The nails shall be

spaced not more than one (1) foot apart, and all nails shall be covered by not less than two (2) plies of felt.

Third—A width of eighteen (18) inches on each sheet shall be mopped uniformly with KOPPERS Old Style Pitch. This mopping shall be held back two (2) inches from the lower edge of each sheet, and shall extend back twenty (20) inches from the lower edge. The finished felt surface shall be smooth and free from pitch drippings.

All felt shall be laid without wrinkles or buckles.

Fourth—Spread with a mop a uniform coating of KOPPERS Type S Asphalt into which, while hot, embed not less than two hundred and fifty (250) pounds of slag for each one hundred (100) square feet. The slag shall be dry and free from dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

When roofing is applied in damp or cold weather the slag must be heated and applied warm on the roof.

The finished surface shall be broomed clean of all loose slag.

GENERAL. For each one hundred (100) square feet of completed roofing surface there shall be used not less than sixty (60) pounds of KOPPERS Old Style Pitch and not less than forty (40) pounds nor more than fifty (50) pounds of KOPPERS Type S Asphalt.

Pitch and Asphalt shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

Where the steep roof joins the flat roof, the roofing on the flat surface shall be carried up the inclined surface not less than twenty-four (24) inches before the steep roofing is applied.

BOND. If a KOPPERS 10-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval, and also under the following condition:

KOPPERS Bonded Steep Roofing is to be applied in connection with KOPPERS Bonded Flat Roofing.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent on request.



KOPPERS SPECIAL 10-YEAR STEEP ROOFING SPECIFICATION No. 4

Over Wood Decks for Inclines
Exceeding Four (4) Inches Per Foot

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 10-Year Special Steep Type Specification No. 4 Over Boards.

(Where bond is required add the following sentence.) A KOPPERS 10-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be clean, smooth, firm and free from knot holes, large cracks and loose boards. The lumber shall be seasoned or treated.

APPLICATION. First—Lay over the entire surface two (2) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet. The felt shall be laid across and not up and down the slope of the roof. Nail each sheet with one (1) inch barbed roofing nails through flat tin discs two (2) inches from the lower edge. Nails shall be spaced not more than eighteen (18) inches apart.

Second—Spread with a mop over the surface thus prepared a uniform coating of KOPPERS Type S Asphalt into which, while hot, embed a sheet of KOPPERS Mineral Surfaced Roofing, lapping each sheet the full nineteen (19) inch selvage. Sheets of KOPPERS mineral surfaced roofing shall be laid across and not up and down the slope of the roof, and shall be securely fastened in place along the selvage side with a double course of one (1) inch barbed roofing nails through flat tin discs, nails in each course to be spaced twelve (12) inches apart and courses staggered. Nailing course nearest the longitudinal center of the sheet shall be held back from the mineral surfacing two inches.

Third—Over the full width of the nineteen (19) inch selvage spread with a mop a uniform coating of KOPPERS Type S Asphalt into which, while hot, thoroughly embed the following sheet of KOPPERS Mineral Surfaced Roofing.

Fourth—There shall be a six (6) inch end lap between adjoining sheets. The underlying sheet of each end lap shall be nailed with eight (8) one (1) inch barbed roofing nails through flat tin discs. Nails to be spaced four (4) inches apart starting two (2) inches from the lower edge of each sheet. Coat the underside of six (6) inch end lap with KOPPERS Type S Asphalt and firmly imbed the overlapping sheet.

All edges and end laps shall be carefully rubbed down to provide proper adhesion.

GENERAL. KOPPERS mineral surfaced roofing shall be cut in strips not exceeding twenty (20) feet in length and shall be stacked flat for sufficient time to allow these strips to become perfectly flat before starting application.

All felts and mineral surfaced roofing shall be laid without wrinkles or buckles.

For each one hundred (100) square feet of completed roofing surface there shall be used not less than fifty (50) pounds of Koppers Type S Asphalt. Asphalt shall not be heated above three hundred, seventy-five (375) degrees, F.

Where the steep roof joins the flat roof, the roofing in the flat surface shall be carried up the inclined surface not less than twenty-four (24) inches before the steep roofing is applied.

BOND. If a KOPPERS 10-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval, and also under the following condition:

KOPPERS Special Steep Bonded Roofing is to be applied in connection with KOPPERS Bonded Flat Roofing.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent on request.



KOPPERS 20-YEAR ROOFING SPECIFICATION No. 5

4-Ply Over Poured Concrete or Poured Gypsum [Maximum Incline Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

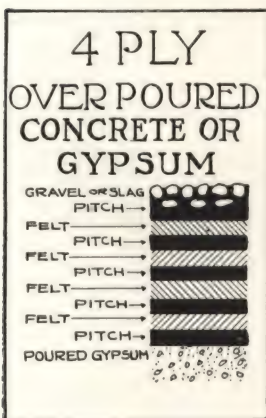
The roofing shall be KOPPERS 20-Year Type Specification No. 5, 4-Ply Over Poured Concrete or Poured Gypsum.

(When Bond is required add the following sentence.) A KOPPERS 20-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm and clean, and if inclined shall be properly sloped to outlets.

Decks or inclines exceeding one (1) inch and less than two (2) inches to the foot shall permit nailing or creosoted wood nailing strips must be set in the concrete flush with its surface, these strips to be spaced three (3) feet apart and placed up and down and not across the slope of the roof.



APPLICATION. First—Apply a uniform coating of KOPPERS Old Style Pitch to the deck.

Second—Lay over the entire surface four (4) full thicknesses of KOPPERS Tarred Felt, lapping each sheet twenty-four and one-half (24½) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-four and one-half (24½) inches on each sheet so that in no place shall felt touch felt.

When nailing is necessary nails should be placed not less than three (3) inches from the

upper edge of each sheet and not more than three (3) feet apart. All nails shall be covered by not less than three (3) plies of felt.

All felts shall be laid without wrinkles or buckles.

Third—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt, and from one-fourth (¼) inch to five-eighths (⅝) inch in size.

GENERAL. For each one hundred (100) square feet of completed roofing there shall be used not less than two hundred (200) pounds of KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 20-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent on request.

KOPPERS 20-YEAR ROOFING SPECIFICATION No. 6

4-Ply Over Poured Concrete or Poured Gypsum Deck [Maximum Incline One-Quarter (¼) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be a KOPPERS 20-Year Type Specification No. 6, 4-Ply Over Poured Concrete or Poured Gypsum.

(When Bond is required, add the following sentence.) A KOPPERS 20-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm and clean.

APPLICATION. First—Apply a uniform coating of KOPPERS Old Style Pitch to the deck.

Second—Lay over the entire surface two (2) plies of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full seventeen (17) inches on each sheet so that in no place shall felt touch felt.

Third—Apply a uniform coating of KOPPERS Old Style Pitch.

Fourth—Lay over the entire surface two (2) plies of KOPPERS Approved Tarred Felt lapping each sheet seventeen (17) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full seventeen (17) inches on each sheet so that in no place shall felt touch felt.

Fifth—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt and from one-fourth (¼) inch to five-eighths (⅝) inch in size.

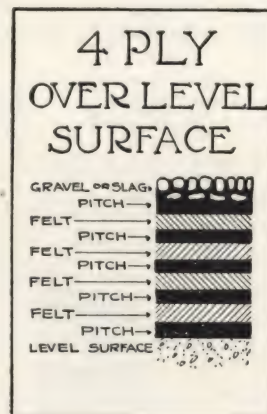
GENERAL. For each one hundred (100) square feet of completed roofing there shall be used not less than two hundred (200) pounds of KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

Felt shall be laid without wrinkles or buckles.

BOND. If a KOPPERS 20-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent on request.



KOPPERS 15-YEAR ROOFING SPECIFICATION No. 7

3-Ply Over Poured Concrete or Poured Gypsum [Maximum
Incline Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be a KOPPERS 15-Year Type Specification No. 7, 3-Ply Over Poured Concrete or Poured Gypsum.

(When Bond is required, add the following sentence.) A KOPPERS 15-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm and clean, and if inclined shall be properly sloped to outlets.

Decks or inclines exceeding one (1) inch and less than two (2) inches to the foot shall permit nailing or creosoted wood nailing strips must be set in the concrete flush with its surface, these strips to be spaced three (3) feet apart and shall be placed up and down and not across the slope of the roof.

APPLICATION. First—Apply a uniform coating of KOPPERS Old Style Pitch to the deck.

Second—Lay over the entire surface three (3) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-two (22) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-two (22) inches on each sheet so that in no place shall felt touch felt.

When nailing is necessary nails shall be placed not less than three (3) inches from the upper edge of each sheet and not less than three (3) feet apart. All nails shall be covered by not less than two (2) plies of felt.

All felts shall be laid without wrinkles or buckles.

Third—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

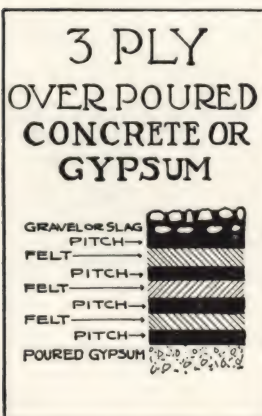
GENERAL. For each one hundred (100) square feet of completed roofing there shall be used not less than one hundred and seventy-five (175) pounds of

KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 15-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent on request.



KOPPERS STEEP 10-YEAR ROOFING SPECIFICATION No. 8

4-Ply Over Poured Concrete or Poured Gypsum [Maximum
Incline Four (4) Inches Per Foot and Not Less Than
Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS Ten Year Steep Type Specification No. 8, 4-Ply Over Poured Concrete or Poured Gypsum.

(When Bond is required add the following sentence.) A KOPPERS 10-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm, clean and should be suitable for nailing. If the Poured Concrete or Poured Gypsum deck does not permit nailing, creosoted wooden nailing strips shall be set in the concrete flush with its surface, these strips to be spaced three (3) feet apart and placed up and down and not across the slope of the roof.

APPLICATION. First—The surface of the deck shall be strip mopped with KOPPERS Old Style Pitch. The strip moppings shall be approximately fifteen (15) inches wide and shall run up and down the slope. Strip moppings shall be spaced not more than forty-five (45) inches apart from center to center.

Second—Lay over the entire surface four (4) thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-four and one-half ($24\frac{1}{2}$) inches over the preceding sheet. The Approved Tarred Felt shall be laid across the slope of the roof. Nail each sheet with one (1)

inch barbed roofing nails through flat tin discs ten (10) inches from the upper edge. The nails shall be spaced not more than one (1) foot apart unless nailing strips are used. When nailing strips are used, the felt shall be fastened at each nailing strip with two (2) nails at a distance of eight (8) and ten (10) inches from the upper edge of each sheet.

Third—A width of eighteen (18) inches on each sheet shall be mopped uniformly with KOPPERS Old Style Pitch. This mopping shall be held back two (2) inches from the lower edge of each sheet and shall extend back twenty (20) inches from the lower edge. The finished felt surface shall be smooth and free of pitch drippings. KOPPERS Approved Tarred Felt shall be laid without wrinkles or buckles.

Fourth—Spread with a mop a uniform coating of KOPPERS Type S Asphalt over the entire surface into which, while hot, embed not less than two hundred and fifty (250) pounds of slag per one hundred (100) square feet. The slag shall be dry and free from dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

When roofing is applied in damp or cold weather the slag must be heated and applied warm on the roof. The finished surface shall be broomed clean of all loose slag.

GENERAL. For each one hundred (100) square feet of completed roofing surface there shall be used not less than sixty (60) pounds of KOPPERS Old Style Pitch and not less than forty (40) pounds nor more than fifty (50) pounds of KOPPERS Type S Asphalt.

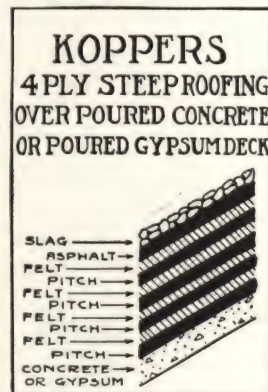
Pitch and Asphalt shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

Where the steep roof joins the flat roof the roofing on the flat surface shall be carried up the inclined surface not less than twenty-four (24) inches before the steep roofing is applied.

BOND. If a KOPPERS 10-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval, and also under the following condition:

KOPPERS Steep Bonded Roofing is to be applied in connection with KOPPERS Bonded Flat Roofing.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing will be sent.



KOPPERS SPECIAL STEEP 10-YEAR ROOFING SPECIFICATION No. 9

Over Poured Concrete or Poured Gypsum Deck
[For Inclines Exceeding Four (4) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 10-Year Special Steep Type Specification No. 9, Over Poured Concrete or Poured Gypsum.

(When Bond is required, add the following sentence.) A KOPPERS 10-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm and suitable for nailing. If the Poured Concrete or Poured Gypsum deck does not permit nailing, creosoted nailing strips shall be set flush with the deck, such strips to be spaced three (3) feet apart and placed up and down the slope of the roof.

APPLICATION. First—Apply over the deck surface a priming coat of KOPPERS Asphalt Primer which shall be allowed to dry for at least one (1) hour.

Second—Coat the entire surface of the deck with a uniform mopping of KOPPERS Type S Asphalt into which, while hot, embed one (1) ply of KOPPERS Approved Tarred Felt, lapping each sheet six (6) inches over the preceding sheet. The felt shall be laid across and not up and down the slope of the roof. The six (6) inch lap shall be thoroughly mopped with KOPPERS Type S Asphalt so that in no place shall felt touch felt. Nail each sheet two (2) inches from the lower edge with barbed roofing nails driven through flat tin discs and spaced not more than eighteen (18) inches on center.

When nailing strips are used the felt shall be nailed with three (3) nails through flat tin discs, spaced eight (8) inches apart and starting two (2) inches from the lower edge of each sheet at each nailing strip.

Third—Spread with a mop over the surface thus prepared a uniform coating of KOPPERS Type S Asphalt, into which, while hot, embed a sheet of KOPPERS Mineral Surfaced Roofing, lapping each sheet the full nineteen (19) inch selvage. Sheets of KOPPERS Mineral Surfaced Roofing shall be laid across and not up and down the slope of the roof and shall be securely fastened in place along the selvage side with a double course of one (1) inch barbed roofing nails through flat tin discs, nails in each course to be spaced twelve (12) inches apart and courses staggered. Nailing occurring nearest the longitudinal center of each sheet shall be held back from the mineral surfacing two (2) inches. When nailing strips are used the sheets shall be nailed along the selvage side with three (3) nails driven through flat tin discs, spaced five (5) inches apart at each nailing strip. All nails to be held back two (2) inches from the mineral surfacing.

Fourth—Over the full width of the selvage spread with a mop a uniform coating of KOPPERS Type S Asphalt into which, while hot, thoroughly embed the following sheet of KOPPERS Mineral Surfaced Roofing.

There shall be a six (6) inch end lap between adjoining sheets. The underlying sheet of each end lap shall be nailed with eight (8) one (1) inch barbed roofing nails through flat tin discs. Nails to be spaced four (4) inches apart starting two (2) inches from the lower edge of each sheet. Coat the underside of the six (6) inch end lap with KOPPERS Type S Asphalt and firmly embed the overlapping sheet.

All edges and end laps shall be carefully rubbed down to provide proper adhesion.

KOPPERS Mineral Surfaced Roofing shall be cut in strips not exceeding twenty (20) feet in length and shall be stacked flat for sufficient time to permit these strips to become perfectly flat before starting application.

GENERAL. All felts and mineral surfaced roofing shall be laid without wrinkles or buckles.

For each one hundred (100) square feet of completed roof-

(Continued in next column)

KOPPERS 20-YEAR ROOFING SPECIFICATION No. 10

4-Ply Over Precast Concrete Slab
[Maximum Incline One (1) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 20-Year Type Specification No. 10, 4-Ply Over Precast Concrete.

(When Bond is required add the following sentence.) A KOPPERS 20-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, firm, dry and clean. If roof deck is inclined, it shall be properly sloped to the outlets. In such cases the incline shall not exceed one (1) inch to the foot.

APPLICATION. First—Each slab shall be spot or strip mopped with KOPPERS Old Style Pitch. The pitch moppings shall be held back four (4) inches from edge of each joint.

Second—Lay over the entire surface four (4) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-four and one-half (24½) inches over preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-four and one-half (24½) inches on each sheet, so that in no place shall felt touch felt.

KOPPERS Approved Tarred Felt shall be laid without wrinkles or buckles.

Third—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt, and from one-fourth (¼) inch to five-eighths (⅝) inch in size.

GENERAL. For each one hundred (100) square feet of completed roofing surface there shall be used not less than two hundred (200) pounds of KOPPERS Old Style Pitch. The pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 20-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing sent on request.

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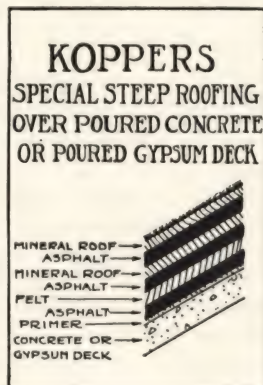
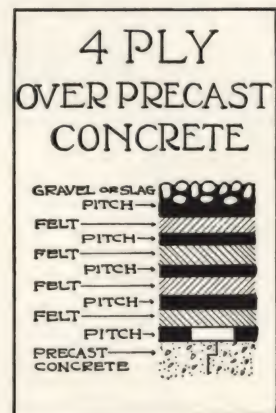
ing surface there shall be used not less than one hundred (100) pounds of KOPPERS Type S Asphalt. Asphalt shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

Where steep roof joins flat roof, the roofing in the flat surface shall be carried up the inclined surface not less than twenty-four (24) inches before steep roofing is applied.

BOND. If a KOPPERS 10-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval, and also under the following condition:

KOPPERS Special Steep Bonded Roofing is to be applied in connection with KOPPERS Bonded Flat Roofing.

INSULATION. For complete information and specifications for applying insulation under KOPPERS Roofing sent on request.



KOPPERS 15-YEAR ROOFING SPECIFICATION No. 11

3-Ply Over Precast Concrete Slab
[Maximum Incline One (1) Inch Per Foot]

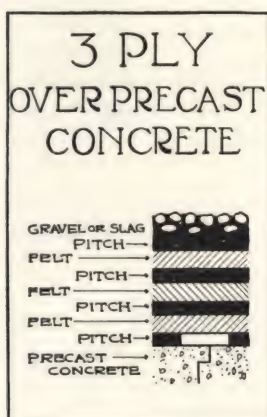
BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be a KOPPERS 20-Year Type Specification No. 11, 3-Ply Over Precast Concrete Slab.

(When Bond is required, add the following sentence.) A KOPPERS 15-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, firm, dry and clean. If the roof deck is inclined it shall be properly sloped to the outlets. In such cases the incline shall not exceed one (1) inch to the foot.



APPLICATION. First—Each slab shall be spot or strip mopped with KOPPERS Old Style Pitch, the moppings shall be held back four (4) inches from the edge of each joint.

Second—Lay over the entire surface three (3) full thicknesses of KOPPERS Approved Tarred Felt lapping each sheet, twenty-two (22) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-two (22) inches so that in no place shall felt touch felt.

All felts shall be laid without wrinkles or buckles.

Third—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each hundred (100) square feet. The gravel or slag shall be dry and free from dirt and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

GENERAL. For each one hundred (100) square feet of completed roofing surface there shall be used not less than one hundred and seventy-five (175) pounds of KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 15-Year Guarantee Bond is required, the roofing must be applied by a roofing contractor approved by the Koppers Products Company who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing sent on request.

KOPPERS 20-YEAR ROOFING SPECIFICATION No. 12

5-Ply Over Precast Gypsum
[Maximum Incline Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 20-Year Type Specification No. 12, 5-Ply Over Precast Gypsum.

(When Bond is required add the following sentence.) A KOPPERS 20-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm and clean. If the roof deck is inclined, it shall be properly sloped to the outlets. All joints between the precast gypsum slabs shall be properly pointed.

APPLICATION. First—Two (2) full thicknesses of KOPPERS Approved Tarred Felt shall be laid over the entire surface, lapping each sheet seventeen (17) inches over the preceding sheet. Nail as often as may be necessary to hold the sheets in place until the remaining felt is laid.

Second—Apply a uniform coating of KOPPERS Old Style Pitch.

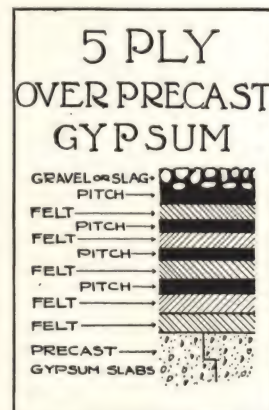
Third—Lay over the entire surface three (3) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-two (22) inches over the preceding sheet, and mopping with KOPPERS Old Style Pitch the full width of the twenty-two (22) inch lap, so that in no place shall felt touch felt. Nail six (6) inches from the upper edge of each sheet and not more than two (2) feet apart. Nails shall not exceed seven-eighths ($\frac{7}{8}$) inch in length and shall be driven through flat tin discs which shall be not less than one (1) inch in diameter.

Fourth—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt and from one-fourth ($\frac{1}{4}$) to five-eighths ($\frac{5}{8}$) inch in size.

GENERAL. All tarred felts shall be laid without wrinkles or buckles. For each one hundred (100) square feet of completed roofing surface there shall be used not less than one hundred and fifty (150) pounds of KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 20-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

INSULATION. Complete specifications for applying insulation under KOPPERS Roofing sent on request.



KOPPERS 15-YEAR ROOFING SPECIFICATION No. 13

4-Ply Over Precast Gypsum
[Maximum Incline Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 15-Year Type Specification No. 13, 4-Ply Over Precast Gypsum.

(When Bond is required add the following sentence.) A KOPPERS 15-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm and clean. If the roof deck is inclined it shall be properly sloped to the outlets. All joints between the precast gypsum slabs shall be properly pointed.



APPLICATION. First—Two (2) full thicknesses of KOPPERS Approved Tarred Felt shall be laid over the entire surface, lapping each sheet seventeen (17) inches over the preceding sheet and nailing as often as may be necessary to hold the sheets until the remaining felt is laid.

Second—Apply a uniform coating of KOPPERS Old Style Pitch.

Third—Lay over the entire surface two (2) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet and mopping with KOPPERS Old Style Pitch the full width of the seventeen (17) inch lap so that in no place shall felt touch felt. Nail six (6) inches from the upper edge of sheet and not more than two (2) feet apart. Nails shall not exceed seven-eighths ($\frac{7}{8}$) inch in length and shall be driven through flat tin discs which shall not be less than one (1) inch in diameter.

Fourth—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

GENERAL. All tarred felt shall be laid without wrinkles or buckles. For each one hundred (100) square feet of completed roofing surface there shall be used not less than one hundred and twenty-five (125) pounds of KOPPERS Old Style Pitch. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 15-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

INSULATION. Complete specifications for applying insulation under KOPPERS Roofing sent on request.

KOPPERS STEEP 10-YEAR ROOFING SPECIFICATION No. 14

5-Ply Over Precast Gypsum
[Maximum Incline Four (4) Inches Per Foot and Not Less Than Two (2) Inches Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 10-Year Steep Type Specification No. 14, 5-Ply Over Precast Gypsum.

(When Bond is required add the following sentence.) A KOPPERS 10-Year Guarantee Bond shall be furnished by the roofing contractor.

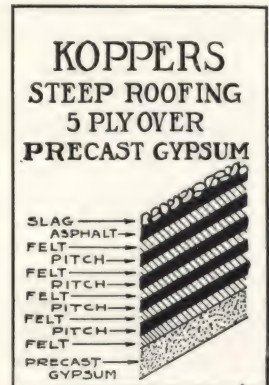
DETAILED SPECIFICATIONS

DECK. The roof deck shall be smooth, dry, firm and clean. Its incline shall not exceed four (4) inches per foot, nor be less than two (2) inches per foot. All joints between the precast gypsum slabs shall be properly pointed.

APPLICATION. First—Lay over the entire surface five (5) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-six (26) inches over the preceding sheet. The felt shall be laid across and not up and down the slope of the roof. Nail each sheet with one (1) inch barbed roofing nails through flat tin discs ten (10) inches from the upper edge. The nails shall be spaced not more than one (1) foot apart.

Second—A width of eighteen (18) inches of each sheet shall be mopped uniformly with KOPPERS Old Style Pitch. This mopping shall be held back two (2) inches from the lower edge and shall extend back twenty (20) inches from the lower edge. The finished felt surface shall be smooth and free from pitch drippings.

Third—Spread with a mop a uniform coating of KOPPERS Type S Asphalt over the entire surface into which, while hot, embed not less than two hundred and fifty (250) pounds of slag which shall be from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size. The slag shall be dry and free from dirt. If the slag is damp or if the weather is cold the slag shall be heated, and shall be applied warm. The finished surface shall be broomed clean of all loose slag.



GENERAL. All tarred felt shall be laid without wrinkles or buckles.

There shall be not less than sixty (60) pounds of KOPPERS Old Style Pitch and not less than forty (40) pounds nor more than fifty (50) pounds of KOPPERS Type S Asphalt used for each one hundred (100) square feet of completed roofing surface. The pitch and asphalt shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

Where the steep roof joins the flat roof the roofing on the flat surface shall be carried up the inclined surface not less than twenty-four (24) inches before the steep roofing is applied.

BOND. If a KOPPERS 10-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval, and also under the following condition:

KOPPERS Steep Bonded Roofing is to be applied in connection with KOPPERS Bonded Flat Roofing.

INSULATION. Complete specifications for applying insulation under KOPPERS Roofing sent on request.

KOPPERS 20-YEAR ROOFING SPECIFICATION No. 15

4-Ply Over Book Tile

[Maximum Incline One (1) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be a KOPPERS 20-Year Type Specification No. 15, 4-Ply Over Book Tile.

(When Bond is required add the following sentence.) A KOPPERS 20-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS



DECK. The book tile shall be surfaced with not less than one-half ($\frac{1}{2}$) inch of Portland Cement Mortar. The roof deck shall be smooth, firm, dry and clean. If the roof deck is inclined it shall be properly sloped to the outlets.

APPLICATION. First—Apply a uniform coating of KOPPERS Old Style Pitch to the roof deck.

Second—Lay over the entire surface four (4) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-four and one-half ($24\frac{1}{2}$) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-four and one-half ($24\frac{1}{2}$) inches on each sheet so that in no place shall felt touch felt.

Third—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

GENERAL. All tarred felt shall be laid without wrinkles or buckles.

For each one hundred (100) square feet of completed roofing surface there shall be used not less than two hundred (200) pounds of KOPPERS Old Style Pitch. Pitch should not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS 20-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing sent on request.

KOPPERS 15-YEAR ROOFING SPECIFICATION No. 16

3-Ply Over Book Tile

[Maximum Incline One (1) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 15-Year Type Specification No. 16, 3-Ply Over Book Tile.

(When Bond is required add the following sentence.) A KOPPERS 15-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The book tile shall be surfaced with not less than one-half ($\frac{1}{2}$) inch of Portland Cement Mortar. The roof deck shall be smooth, firm, dry and clean. If the roof deck is inclined it shall be properly sloped to the outlets.

APPLICATION. First—Apply a uniform coating of KOPPERS Old Style Pitch to the roof deck.

Second—Lay over the entire surface three (3) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-two (22) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-two (22) inches on each sheet so that in no place shall felt touch felt.

Third—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

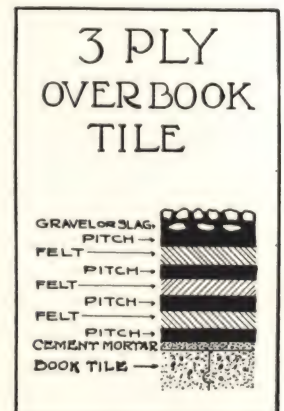
GENERAL. All tarred felt shall be laid without wrinkles or buckles.

For each one hundred (100) square feet of completed roofing surface there shall be used not less than one hundred and seventy-five (175) pounds of KOPPERS Old Style Pitch. Pitch should not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

BOND. If a KOPPERS Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

Note—The Koppers Products Company will issue Guarantee Roofing Bonds in such portions of the United States as are covered by their inspection service.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing sent on request.



KOPPERS PROMENADE TILE ROOFING SPECIFICATION No. 20

5-Ply Over Poured Concrete Under Promenade Tile
[Maximum Incline One (1) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS Promenade Tile, Roofing Specification No. 20, 5-Ply Over Poured Concrete.

If Bond is required refer to paragraph under BOND.

DETAILED SPECIFICATIONS

DECK. The deck shall be concrete and shall be smooth, dry, firm, clean and properly sloped to the outlets.

APPLICATION. First—Apply a uniform coating of KOPPERS Old Style Pitch.

Second—Lay over the entire surface two (2) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full seventeen (17) inches on each sheet so that in no place shall felt touch felt.

Third—Apply a uniform coating of KOPPERS Old Style Pitch.

Fourth—Lay over the entire surface two (2) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full seventeen (17) inches on each sheet so that in no place shall felt touch felt.

Fifth—Before laying the tile, the surface of the roofing shall be thoroughly cleaned and the roofing mopped with KOPPERS Old Style Pitch into which, while hot, embed one (1) layer of KOPPERS Approved Tarred Felt lapping each sheet two (2) inches over the preceding sheet. Over this surfacing and immediately preceding the laying of the tile spread a heavy uniform coating of KOPPERS Old Style Pitch. Only part of the roof surface shall be covered with the last ply of felt and mopping of pitch at a time, the tile then being laid over that portion at once.

Sixth—The vitrified clay tile shall be set in not less than three-fourths ($\frac{3}{4}$) inch of Portland Cement Mortar (1 to 3 mix). The joints shall be grouted full with Portland Cement Mortar (1 to 2 mix). The tile shall be laid to show three-sixteenths ($\frac{3}{16}$) inch to one-fourth ($\frac{1}{4}$) inch joints. Expansion joints three-fourths ($\frac{3}{4}$) inch wide filled with plastic mixture, which must be approved by the architect, shall be provided between the tile and all flashings. Either metal or mastic expansion joints shall be provided throughout the roof surface as may be necessary to take care of expansion. All expansion joints shall extend from the top of the tile through the cement mortar to the felt and pitch waterproofing. Expansion joints shall be spaced not more than twenty (20) feet apart in any direction. Expansion joints shall also be installed at all walls, skylights, curbs, etc.

GENERAL. All tarred felts shall be laid without wrinkles or buckles. For each one hundred (100) square feet of completed roofing surface there should be used not less than two hundred (200) pounds of KOPPERS Old Style Pitch. Pitch should not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

All end laps between sections of tarred felt shall be staggered at least six (6) inches.

Notice—The Koppers Products Company will not be responsible or liable for leaks due to the installation, contraction or expansion of Promenade Tile and will not be responsible for the taking up and replacing of tile in order to locate leaks through the roofing.

BOND. If a KOPPERS Guarantee Bond is required, this must be taken up with our nearest District Office or representative.

INSULATION. Complete information and specifications for applying insulation under KOPPERS Roofing sent on request.

KOPPERS 10-YEAR SPRAY POND ROOFING SPECIFICATION No. 21

5-Ply Over Poured Concrete Deck
[Maximum Incline One (1) Inch Per Foot]

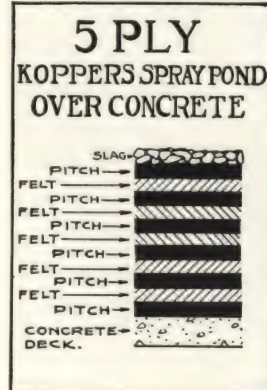
BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS Spray Pond 10-Year Type Specification No. 21, 5-Ply Over Poured Concrete.

(When Bond is required add the following sentence.) A KOPPERS 10-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The roof deck shall be clean, smooth and free from all loose material.



APPLICATION. First—Apply a uniform coating of KOPPERS Old Style Pitch to the roof deck.

Second—Lay over the entire surface two (2) plies of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full width of each lap so that in no place shall felt touch felt.

Third—Apply a uniform coating of KOPPERS Old Style Pitch over the entire surface.

Fourth—Lay over the entire surface two (2) plies of KOPPERS Approved Tarred Felt, lapping each sheet seventeen (17) inches over the preceding sheet mopping with KOPPERS Old Style Pitch the full width of each lap so that in no place shall felt touch felt.

Fifth—Apply a uniform coating of KOPPERS Old Style Pitch over the entire surface.

Sixth—Immediately preceding the slagging in of the roof thoroughly clean the surface of the roofing and spread with a mop, a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed one (1) layer of KOPPERS Approved Tarred Felt, lapping each sheet two (2) inches over the preceding sheet.

Seventh—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than three hundred (300) pounds slag for each one hundred (100) square feet. The slag shall be dry and free from dirt and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

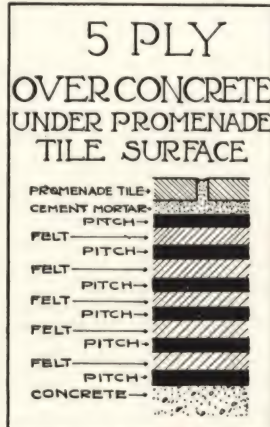
Eighth—All loose slag shall be swept from the roof and a second uniform coating of KOPPERS Old Style Pitch poured over the slag into which, while hot, the remainder of the slag shall be embedded.

GENERAL. All tarred felt shall be applied without wrinkles or buckles. There shall be used not less than two hundred and seventy-five (275) pounds of KOPPERS Old Style Pitch for each one hundred (100) square feet of completed roof surface. Pitch shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

At points where water pressure from the spray is excessive the roof surface shall be protected with creosoted board platforms or other suitable construction to break the force of the water. These platforms shall be laid on top of the roof surface and not fastened to the deck.

BOND. If a KOPPERS 10-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

INSULATION. Complete specifications for applying insulation under KOPPERS Roofing sent on request.



KOPPERS 20-YEAR ROOFING SPECIFICATION No. 17

4-Ply Over Steel Deck With Insulation [Maximum Incline One (1) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 20-Year Type Specification No. 17, 4-Ply Over Steel Deck with Insulation.

(When Bond is required add the following sentence.) A KOPPERS 20-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The Steel Deck shall be clean, smooth and dry, and shall be properly anchored to the steel purlins, and all joints properly lapped. The deck shall be primed with KOPPERS Asphalt Primer before application of the insulation, unless previously shop-coated. If the deck is inclined it shall be properly graded to the outlets.

APPLICATION. First—Mop the steel deck with KOPPERS Type S Asphalt into which, while hot, embed the insulation pressing firmly into the asphalt. The insulation must be thoroughly dry and of approved type and must be able to retain nails. When more than one (1) layer

of insulation is used the top surface of each layer shall be coated with KOPPERS Old Style Pitch into which, while hot, embed the succeeding layer. All joints shall be broken between the layers of insulation. All layers of insulation shall be parallel to preceding layers. Edges shall be brought closely together and shall not be forced into place. All space between edges of insulation shall be completely filled with KOPPERS Old Style Pitch. No more insulation shall be installed at any one time than can be protected by pitch and felt in case of sudden weather changes. Cut-offs consisting of two (2) plies of KOPPERS Approved Tarred Felt and moppings of KOPPERS Type S Asphalt extending on to the deck at least six (6) inches and four (4) inches on top of the insulation shall be applied at the end of each day's work over exposed edges of insulation.

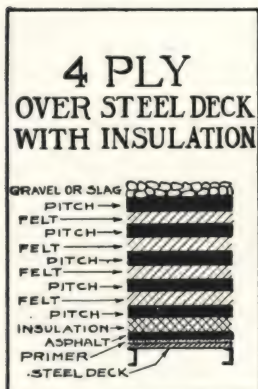
All edges of insulation adjoining parapet walls, cants, eaves, vertical surfaces, etc., shall be sealed by applying two (2) plies of KOPPERS Approved Tarred Felt and moppings of Asphalt.

Second—Apply a uniform coating of KOPPERS Old Style Pitch over the insulation.

Third—Lay over the entire surface four (4) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-four and one-half (24½) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-four and one-half (24½) inches on each sheet so that in no place shall felt touch felt. All tarred felts shall be laid without wrinkles or buckles.

Fourth—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel, or three hundred (300) pounds of slag, for each one hundred (100) square feet. The gravel or slag shall be dry and free from dirt, and from one-fourth (¼) inch to five-eighths (⅝) inch in size.

GENERAL. For each one hundred (100) square feet of completed roofing there shall be used not less than two hundred (200) pounds of KOPPERS Old Style Pitch and not less than thirty-five (35) pounds of KOPPERS Old Style Pitch for moppings between each layer of insulation. Approximately thirty-five (35) pounds of KOPPERS Type S Asphalt shall be required for the deck mopping. Pitch and Asphalt shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.



Koppers Products Company will not be responsible for any damage to or below the built-up roofing caused by or as the result of the use of insulation.

BOND. If a KOPPERS 20-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

INSULATION. Complete specifications on insulation under KOPPERS Roofing sent on request.

KOPPERS 15-YEAR ROOFING SPECIFICATION No. 18

3-Ply Over Steel Deck With Insulation [Maximum Incline One (1) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 15-Year Type Specification No. 18, 3-Ply Over Steel Deck with Insulation.

(When Bond is required add the following sentence.) A KOPPERS 15-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The Steel Deck shall be clean, smooth and dry, and shall be properly anchored to the steel purlins, and all joints properly lapped. The deck shall be primed with KOPPERS Asphalt Primer before application of the insulation, unless previously shop-coated. If the deck is inclined it shall be properly graded to the outlets.

APPLICATION. First—Mop the steel deck with KOPPERS Type S Asphalt into which, while hot, embed the insulation, pressing firmly into the asphalt. The insulation must be thoroughly dry and of approved type and must be able to retain nails. When more than one (1) layer of insulation is used the top surface of each layer shall be coated with KOPPERS Old Style Pitch into which, while hot, embed the succeeding layer. All joints shall be broken between layers of insulation. All layers of insulation shall be parallel to preceding layers. Edges shall be brought closely together and shall not be forced into place. All space between edges of insulation shall be completely filled with KOPPERS Old Style Pitch. No more insulation shall be installed at any one time than can be protected by pitch and felt in case of sudden weather changes. Cut-offs consisting of two (2) plies of KOPPERS Approved Tarred Felt and moppings of KOPPERS Type S Asphalt extending on to the deck at least six (6) inches and four (4) inches on top of the insulation shall be applied at the end of each day's work over exposed edges of insulation.

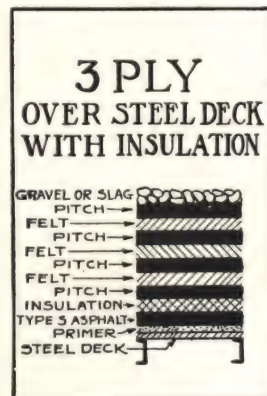
All edges of insulation adjoining parapet walls, cants, eaves, vertical surfaces, etc., shall be sealed by applying two (2) plies of KOPPERS Approved Tarred Felt and moppings of Asphalt.

Second—Apply a uniform coating of KOPPERS Old Style Pitch over the insulation.

Third—Lay over the entire surface three (3) full thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-two (22) inches over the preceding sheet, mopping with KOPPERS Old Style Pitch the full twenty-two (22) inches on each sheet so that in no place shall felt touch felt. All tarred felts shall be laid without wrinkles or buckles.

Fourth—Pour over the entire surface a uniform coating of KOPPERS Old Style Pitch into which, while hot, embed not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag for each one hundred (100) square feet. The gravel or slag shall be dry and free from

(Continued on page 13)



dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

GENERAL. For each one hundred (100) square feet of completed roofing there shall be used not less than one hundred and seventy-five (175) pounds of KOPPERS Old Style Pitch and not less than thirty-five (35) pounds of KOPPERS Old Style Pitch for moppings between each layer of insulation. Approximately thirty-five (35) pounds of KOPPERS Type S Asphalt will be required for deck mopping. Pitch and asphalt shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

Koppers Products Company will not be responsible for any damage to or below the built-up roofing caused by or as the result of the use of insulation.

BOND. If a KOPPERS 15-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company, who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.

INSULATION. Complete specifications on insulation under KOPPERS Roofing sent on request.

KOPPERS STEEP 10-YEAR ROOFING SPECIFICATION No. 19

4-Ply Over Steel Deck With Insulation

[Maximum Incline Four (4) Inches Per Foot and Not Less Than One (1) Inch Per Foot]

BRIEF SPECIFICATION (For Architects and Engineers)

The roofing shall be KOPPERS 10-Year Type Specification No. 19, 4-Ply Over Steel Deck with Insulation.

(When Bond is required add the following sentence.) A KOPPERS 10-Year Guarantee Bond shall be furnished by the roofing contractor.

DETAILED SPECIFICATIONS

DECK. The Steel Deck shall be clean, smooth and dry, and shall be properly anchored to the steel purlins, and all joints properly lapped. The deck shall be primed with KOPPERS Asphalt Primer before application of the insulation, unless previously shop-coated. The deck shall be properly graded to the outlets.



APPLICATION. First — Mop the steel deck with KOPPERS Type S Asphalt into which, while hot, embed the insulation pressing firmly into the asphalt. The insulation must be thoroughly dry and of approved type and must be able to retain nails. Insulation shall be securely fastened to the deck by means of approved screws, expanding nails or cleats which shall be placed at each corner and in the center of each sheet of insulation. When more than one (1) layer of insulation is applied fasteners shall be driven after the top layer has been applied. The top

surface of each layer of insulation shall be coated with KOPPERS Old Style Pitch into which embed the succeeding layer. All joints shall be broken between layers of insulation. All layers of insulation shall be parallel to succeeding layers. Edges shall be brought closely together and shall not be forced into place. All space between edges of insulation shall be completely filled with KOPPERS Old Style Pitch.

No more insulation shall be installed at any one time than can be protected by pitch and felt in case of sudden weather changes.

Cutoffs consisting of two (2) plies of KOPPERS Approved Tarred Felt and moppings of KOPPERS Type S Asphalt extending on to the deck at least six (6) inches and four (4) inches on top of the insulation shall be applied at the end of each day's work over exposed edges of insulation.

All edges of insulation adjoining parapet walls, cants, eaves, vertical surfaces, etc., shall be sealed by applying two (2) plies of KOPPERS Approved Tarred Felt and moppings of Asphalt.

Second—The surface of the insulation shall be strip mopped with KOPPERS Old Style Pitch. The strip mopping shall be approximately fifteen (15) inches wide and shall run up and down the slope. Strip moppings shall be spaced not more than forty-five (45) inches apart from center to center.

Third—Lay over the entire surface four (4) thicknesses of KOPPERS Approved Tarred Felt, lapping each sheet twenty-four and one-half ($24\frac{1}{2}$) inches over the preceding sheet. The Approved Tarred Felt shall be laid across the slope of the roof. Nail each sheet with nails of sufficient length to completely penetrate the insulation but which will not puncture the steel deck. Nails to be placed ten (10) inches from the upper edge of each ply of felt and to be spaced not more than one (1) foot apart.

Fourth—A width of eighteen (18) inches on each sheet shall be mopped uniformly with KOPPERS Old Style Pitch. This mopping shall be held back two (2) inches from the lower edge of each sheet and shall extend back twenty (20) inches from the lower edge. The finished felt surface shall be smooth and free of pitch drippings.

Fifth—Spread with a mop a uniform coating of KOPPERS Type S Asphalt over the entire surface into which, while hot, embed not less than two hundred and fifty (250) pounds of slag per one hundred (100) square feet. The slag shall be dry and free from dirt, and from one-fourth ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in size.

When roofing is applied in damp or cold weather the slag must be heated and applied warm on the roof.

The finished surface shall be broomed clean of all loose slag.

GENERAL. All tarred felt shall be laid without wrinkles or buckles.

For each one hundred (100) square feet of completed roofing there shall be used not less than sixty (60) pounds of KOPPERS Old Style Pitch, and not less than thirty-five (35) pounds of KOPPERS Old Style Pitch for moppings between each layer of insulation. Approximately thirty-five (35) pounds of KOPPERS Type S Asphalt will be required for deck moppings and not less than forty (40) pounds nor more than fifty (50) pounds for top mopping into which the slag is embedded.

Pitch and Asphalt shall not be heated above three hundred and seventy-five (375) degrees Fahrenheit.

Where the steep roof joins the flat roof the roofing on the flat surface shall be carried up the inclined surface not less than twenty-four (24) inches before the steep roofing is applied.

Koppers Products Company will not be responsible for any damage to or below the built-up roofing caused by or as the result of the use of insulation.

BOND. If a KOPPERS 10-Year Guarantee Bond is required the roofing must be applied by a roofing contractor approved by the Koppers Products Company who shall apply the roofing in strict accordance with the specifications and requirements of the Koppers Products Company and subject to their inspection and approval and under the following condition:

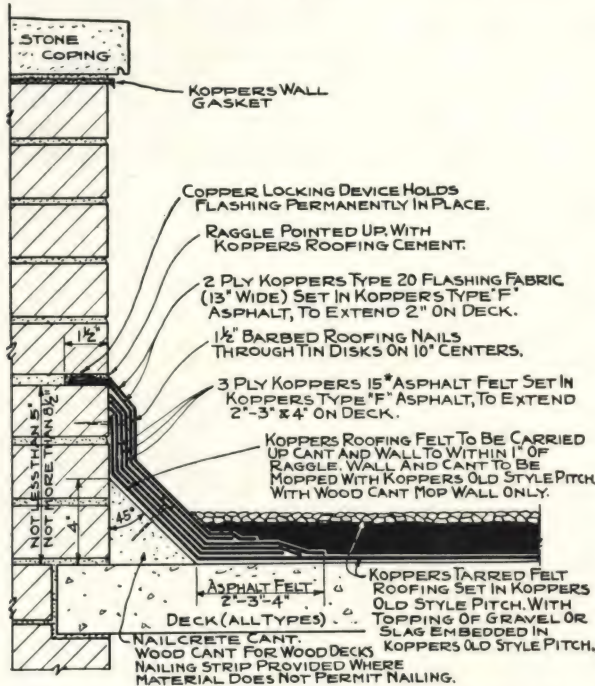
KOPPERS Steep Bonded Roofing is to be applied in connection with KOPPERS Bonded Flat Roofing.

INSULATION. Complete specifications on insulation under KOPPERS Roofing sent on request.

KOPPERS FLASHING

GENERAL. All Flashing Fabric and Asphalt Felt shall be free from wrinkles and buckles.

BOND. If a Koppers 10, 15 or 20-Year Guarantee Flashing Bond is required the flashing must be installed in connection with a Koppers Bonded Roof, the Flashing Bond being for no greater period than the Roofing Bond. Flashing and Roofing shall be installed by a roofing contractor approved by the Koppers Products Company who shall apply Roofing and Flashing in strict accordance with the specifications and requirements of the Koppers Products Company, and subject to their inspection and approval.



Koppers 20-Year Bonded Flashing Specification No. 104

KOPPERS 20-YEAR BONDED FLASHING SPECIFICATION No. 104

BRIEF SPECIFICATION (For Architects and Engineers)
The Flashing shall be KOPPERS 20-Year Type, Specification No. 104.

DETAILED SPECIFICATIONS

APPLICATION. Extend all roofing plies of felt and mopings of pitch up the wall to within one (1) inch of the raggle.

Apply a uniform coating of KOPPERS Type F Asphalt over the roofing extending from the raggle to not less than two (2) inches on to the roof deck. Into the Type F Asphalt embed one (1) ply of KOPPERS 15-Lb. Asphalt Felt, extending from the raggle not less than two (2) inches on to the roof deck. On top of this Flashing strip apply another uniform coating of KOPPERS Type F Asphalt and another Flashing strip, this application being repeated until a three (3) ply reinforcement has been completed. Each strip shall extend on to the deck roofing one (1) inch beyond preceding strip. Felt reinforcement Flashing strips shall not exceed ten (10) feet three (3) inches in length, and there shall be a three (3) inch end lap between adjoining strips.

A uniform coating of KOPPERS Type F Asphalt shall be applied between end laps.

Each Flashing reinforcement strip shall be set in separately and joints must be broken with the underlying Flashing reinforcement strip.

The top ply of Flashing reinforcement shall be nailed in the middle of the cant and half-way between the top of the cant and raggle every ten (10) inches with one and one-half (1 1/2) inch barbed roofing nails through flat tin discs.

Over the entire reinforcement strip and into the full depth of the raggle apply a uniform coating of KOPPERS Type F Asphalt. Insert and fasten the upper part of KOPPERS 20-Year Type Flashing Fabric securely into the raggle by means of the copper locking device riveted to the flashing and press the flashing fabric into the coating of

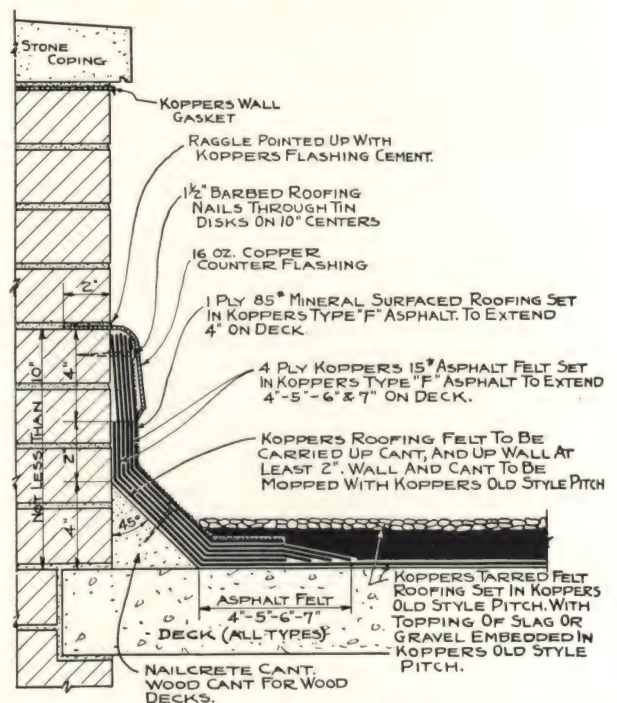
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KOPPERS Type F Asphalt on the reinforcement plies. Apply a uniform coating of KOPPERS Type F Asphalt between the first and second plies of KOPPERS Flashing Fabric, pressing the top ply securely into the Type F Asphalt. All fabric Flashing strips are ten (10) feet three (3) inches long, and each strip shall overlap the preceding strip three (3) inches.

A uniform coating of KOPPERS Type F Flashing shall be applied between end laps.

Fill the raggle completely with KOPPERS Roof Cement.

GENERAL. Flashing Fabric shall be installed immediately so as to prevent seepage of water behind reinforcement strips.



Koppers 20-Year Bonded Flashing Specification No. 107

KOPPERS 20-YEAR BONDED FLASHING SPECIFICATION No. 107

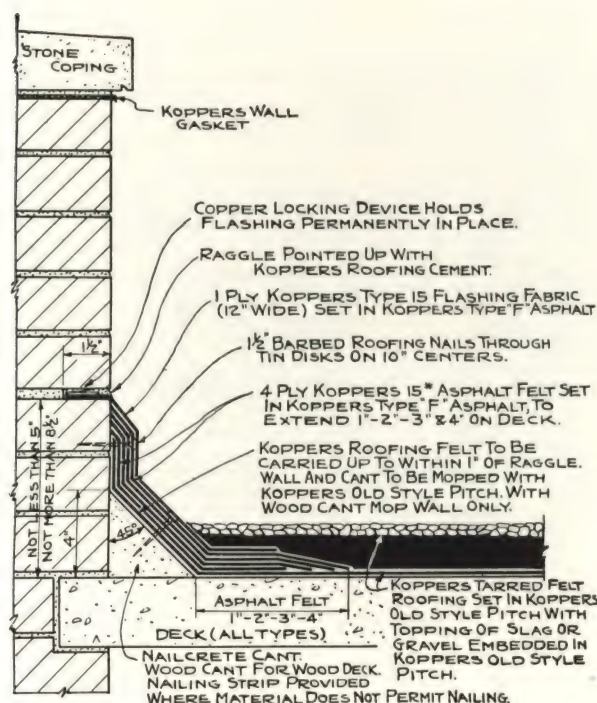
BRIEF SPECIFICATION (For Architects and Engineers)
The flashing shall be installed according to KOPPERS Flashing Specification No. 107.

DETAILED SPECIFICATIONS

APPLICATION. Application shall be the same as flashing specification No. 106 except that four (4) plies of 15-Lb. Asphalt Felt shall be installed as reinforcing plies.

METAL CAP FLASHING FOR SPECIFICATIONS Nos. 101, 106 AND 107. Metal cap flashing shall be installed immediately so as to prevent seepage of water behind the base flashing. We recommend that 14 oz. cold rolled copper be used for 15 and 20-year flashing specifications.

Metal cap flashing shall extend into the raggle not less than two (2) inches and shall have a four (4) inch exposed apron extending down over the base flashing. After the metal cap flashing has been installed completely fill the raggle groove with KOPPERS Roof Cement.



Koppers 15-Year Bonded Flashing Specification No. 105

KOPPERS 15-YEAR BONDED FLASHING SPECIFICATION No. 105

BRIEF SPECIFICATION (For Architects and Engineers)

The Flashing shall be KOPPERS 15-Year Type Specification No. 105.

DETAILED SPECIFICATIONS

APPLICATION. Extend all roofing plies of felt and mopings of pitch up the wall to within one (1) inch of the raggle.

Apply a uniform coating of KOPPERS Type F Asphalt over the roofing extending from the raggle to not less than two (2) inches on to the roof deck. Into the Type F Asphalt embed one (1) ply of KOPPERS 15-Lb. Asphalt Felt, extending from the raggle to not less than two (2) inches on to the roof deck. On top of this Flashing Strip apply another uniform coating of KOPPERS Type F Asphalt and other Flashing Strip, this application being repeated until a four (4) ply reinforcement has been completed. Each strip shall extend on to the deck roofing one (1) inch beyond preceding strip. Felt reinforcement Flashing Strips shall not exceed ten (10) feet three (3) inches in length, and there shall be a three (3) inch end lap between adjoining strips.

A uniform coating of KOPPERS Type F Asphalt shall be applied between end laps.

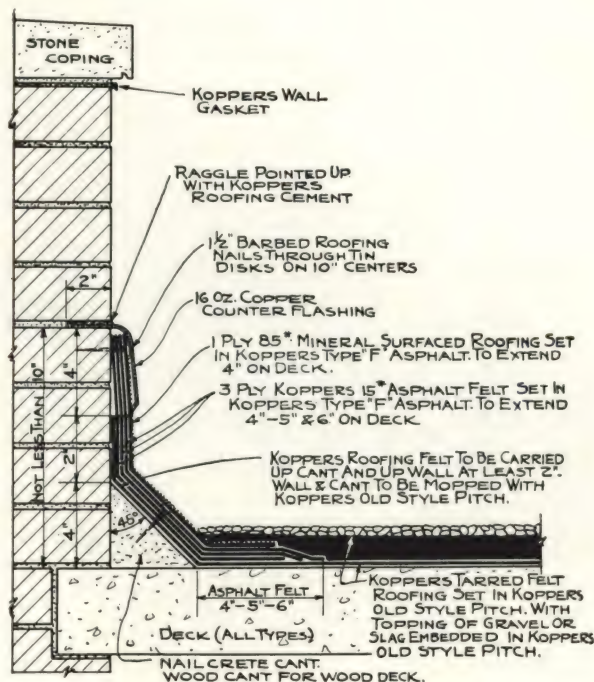
Each Flashing reinforcement strip shall be set in separately and joints must be broken with the underlying Flashing reinforcement strip.

The top ply of Flashing reinforcement shall be nailed in the middle of the cant and half-way between the top of the cant and raggle every ten (10) inches with one and one-half (1 1/2) inch barbed roofing nails through flat tin discs.

Over the entire reinforcement strip and into the full depth of the raggle apply a uniform coating of KOPPERS Type F Asphalt. Insert and fasten the upper part of KOPPERS 15-Year Flashing Fabric securely into the raggle by means of the copper locking device riveted to the flashing and press the flashing fabric into the coating of KOPPERS Type F Asphalt on the reinforcement plies. All Fabric Flashing strips are ten (10) feet three (3) inches long and each strip shall overlap the preceding strip three inches. A uniform coating of KOPPERS Type F Asphalt shall be applied between end laps.

Fill the raggle completely with KOPPERS Roof Cement.

GENERAL. (Specifications Nos. 103, 104 and 105). Flashing Fabric shall be installed immediately so as to prevent seepage of water behind reinforcement strips.



Koppers 15-Year Bonded Flashing Specification No. 106

KOPPERS 15-YEAR BONDED FLASHING SPECIFICATION No. 106

BRIEF SPECIFICATION (For Architects and Engineers)

The flashing shall be installed according to KOPPERS Flashing Specification No. 106.

DETAILED SPECIFICATIONS

APPLICATION. Extend all plies of roofing felt and mopings of pitch up the wall to within 1 inch of the raggle.

Apply a uniform coating of KOPPERS Type F Asphalt over the roofing extending from the raggle to not less than two (2) inches on to the roof deck. Into the Type F Asphalt embed one (1) ply of KOPPERS 15-Lb. Asphalt Felt extending from the raggle to not less than two (2) inches on to the roof deck. On top of this flashing strip apply another uniform coating of KOPPERS Type F Asphalt and another flashing strip. Repeat this application until a three-ply reinforcement has been completed. Each flashing strip shall extend on to the deck roofing one (1) inch beyond the preceding strip.

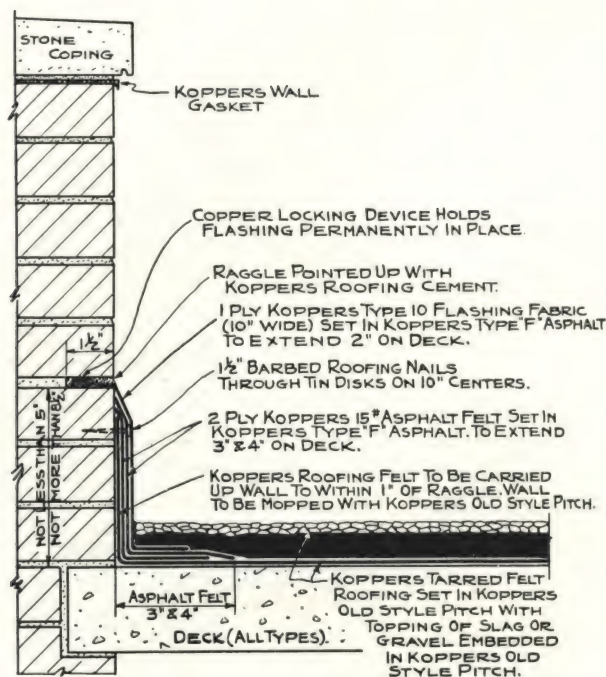
The top ply of flashing reinforcement shall be nailed in the middle of the cant every ten (10) inches with one and one-half (1 1/2) inch barbed roofing nails through flat tin discs.

Coat the entire surface of the asphalt felt flashing reinforcement strip uniformly with KOPPERS Type F Asphalt and embed immediately one (1) layer of eighty-five (85) pound mineral surfaced roofing cut so as to extend from the raggle to the deck angle. Reinforcing felt and mineral surfaced roofing shall be securely fastened at the top with one and one-half inch barbed roofing nails through flat tin discs to prevent slipping, nails to be spaced every ten (10) inches in the vertical mortar joints or nail strips.

All end joints of felt reinforcement strips shall break joints with underlying strip.

All felt reinforcement and mineral surface roofing strips shall not exceed ten (10) feet three (3) inches in length and there shall be a three (3) inch end lap between adjoining strips.

METAL CAP FLASHING. Refer to details explained following Specification No. 107.



Koppers 10-Year Bonded Flashing Specification No. 103

KOPPERS 10-YEAR BONDED FLASHING SPECIFICATION No. 103

BRIEF SPECIFICATION (For Architects and Engineers)
The Flashing shall be KOPPERS 10-Year Type, Specification No. 103.

DETAILED SPECIFICATIONS

APPLICATION. Extend all roofing plies of felt and moppings of Pitch to within one (1) inch of the raggle.

Apply a uniform coating of KOPPERS Type F Asphalt over the roofing extending from the raggle to not less than two (2) inches on to the roof deck. Into the Type F Asphalt embed one (1) ply of KOPPERS 15-Lb. Asphalt Felt extending from the raggle to not less than two (2) inches on to the roof deck. On top of this Flashing Strip apply another uniform coating of KOPPERS Type F Asphalt and another Flashing Strip, this application being the same as the first application strip. Each strip shall extend on to the deck roofing one (1) inch beyond the preceding strip. Felt reinforcement Flashing Strips shall not exceed ten (10) feet three (3) inches in length and there shall be a three (3) inch end lap between adjoining strips.

A uniform coating of KOPPERS Type F Asphalt shall be applied between end laps.

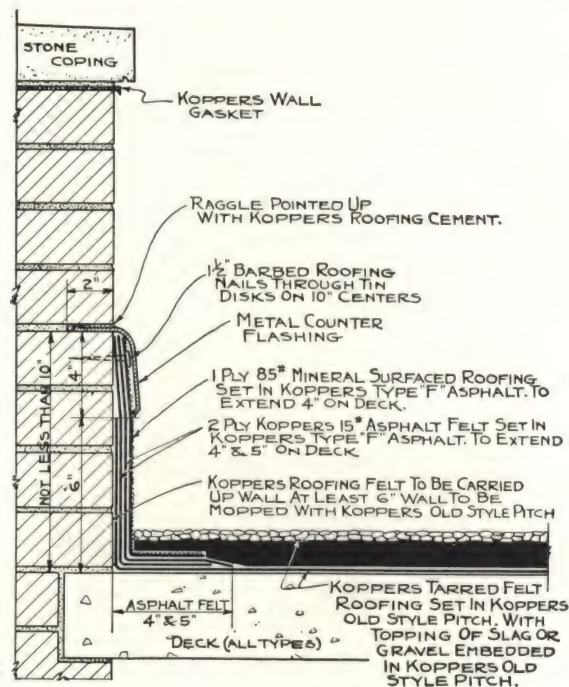
Each flashing reinforcement strip shall be set in separately and joints must be broken with the underlying Flashing reinforcement strip.

Nail through top of felt reinforcement strips and roofing felts every ten (10) inches in horizontal or vertical mortar joints with one and one-half (1½) inch barbed roofing nails through flat tin discs.

Over the entire reinforcement strip and into the full depth of the raggle apply a uniform coating of KOPPERS Type F Asphalt. Insert and fasten the upper part of KOPPERS Type 10 Flashing Fabric securely into the raggle by means of the copper locking device riveted to the Flashing and press the flashing fabric into the coating of KOPPERS Type F Asphalt on the reinforcement plies. All fabric flashing strips are ten (10) feet three (3) inches long and each strip shall overlap the preceding strip three (3) inches. A uniform coating of KOPPERS Type F Asphalt shall be applied between end laps.

Fill the raggle completely with KOPPERS Roof Cement.

GENERAL. Flashing Fabric shall be installed immediately so as to prevent seepage of water behind reinforcement strips.



Koppers 10-Year Bonded Flashing Specification No. 101

KOPPERS 10-YEAR BONDED FLASHING SPECIFICATION No. 101

BRIEF SPECIFICATION (For Architects and Engineers)
The flashing shall be installed according to KOPPERS Flashing Specification No. 101.

DETAILED SPECIFICATIONS

APPLICATION. All plies of roofing felt and moppings of pitch shall be carried up perpendicular surfaces at least six (6) inches.

Apply a uniform coating of KOPPERS Type F Asphalt to a height of not less than ten (10) inches on the perpendicular surface and four (4) inches out on the deck roofing into which embed one (1) ply of KOPPERS 15-Lb. Asphalt Felt cut so as to completely cover the coating of KOPPERS Type F Asphalt.

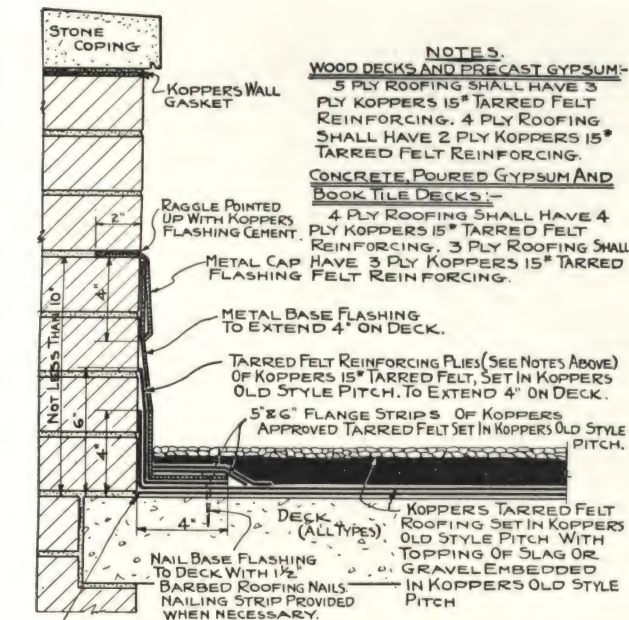
Coat this reinforcing strip of felt uniformly with KOPPERS Type F Asphalt and install another reinforcing ply of KOPPERS 15-Lb. Asphalt Felt. This strip to extend on to the deck roofing one (1) inch beyond the edges of the preceding strip.

Coat the entire surface of the asphalt felt flashing reinforcement strip uniformly with KOPPERS Type F Asphalt and embed immediately one (1) layer of eighty-five (85) pound mineral surfaced roofing cut so as to extend from the raggle to the deck angle. Reinforcing felt and mineral surfaced roofing shall be securely fastened at the top with one and one-half inch barbed roofing nails through flat tin discs to prevent slipping, nails to be spaced every ten (10) inches in the vertical mortar joints or nail strips.

All end joints of felt reinforcement strips shall break joints with underlying strip.

All felt reinforcement and mineral surface roofing strips shall not exceed ten (10) feet three (3) inches in length and there shall be a three (3) inch end lap between adjoining strips.

METAL CAP FLASHING. Refer to details explained following Specification No. 107.



NOTE:— FOR CONCRETE, POURED GYPSUM AND BOOK TILE DECKS, ALL PLIES OF ROOFING FELT SHALL BE CUT OFF AT WALL, FOR ALL OTHER TYPES OF DECKS 2 PLIES ROOFING FELT TO BE CARRIED UP WALL 4" AND REMAINING PLIES CUT OFF AT WALL.

Koppers Flashing Specification No. 100 (Not Bonded)

METAL CAP AND BASE FLASHING— KOPPERS SPECIFICATION No. 100

BRIEF SPECIFICATION (For Architects and Engineers)
The flashing shall be installed according to KOPPERS Specification No. 100.

DETAILED SPECIFICATIONS

APPLICATION. When a metal base flashing is used, felt reinforcement at all wall angles, skylight curbs and other vertical surfaces shall be installed as follows:

BOARD AND PRECAST GYPSUM DECKS. The felt in the first two plies of the roof shall be carried up perpendicular surfaces at least four (4) inches, and the remaining plies cut off at the angle of the roof deck and perpendicular surfaces.

(*) Felt reinforcing plies shall then be set in separately, all cemented solidly together and to the underlying surface with pitch. The first ply shall extend out on the deck roofing at least four (4) inches, each ply extending one (1) inch beyond the preceding ply, and up the perpendicular surface at least six (6) inches; the last ply to be mopped with pitch before the metal base flashing is set in place. All end joints shall be broken with the underlying reinforcing strip.

CONCRETE, POURED GYPSUM, BOOK TILE DECKS. All plies of felt used in the roofing shall be cut off at the angle of the roof deck and perpendicular surfaces.

(**) Felt reinforcing plies shall then be set in separately, all cemented solidly together and to the underlying surface with pitch. The first ply shall extend out on the deck roofing at least four (4) inches, each ply extending one (1) inch beyond the preceding ply, and up the perpendicular surface at least six (6) inches; the last ply to be mopped with pitch before the metal base flashing is set in place. All end joints shall be broken with the underlying reinforcing strip.

INSTALLATION OF METAL BASE FLASHING. The metal base flashing shall extend up the wall not less than ten (10) inches and on the deck not less than four (4) inches. The base flashing shall be nailed to the deck, and if deck does not permit nailing a creosoted wood nailing strip must be provided. Nails shall be spaced not more than four (4) inches apart and within one (1) inch from the outer edge of the metal base flange.

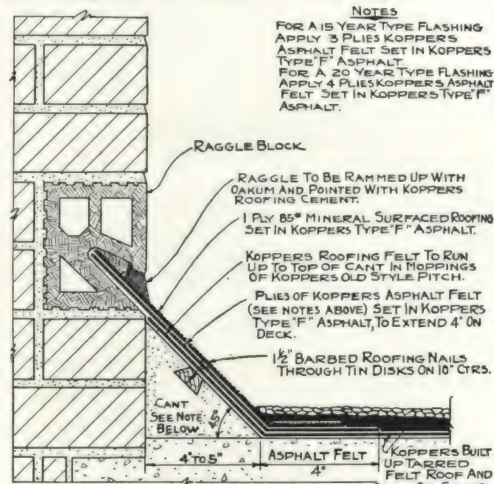
Two (2) tarred felt strips shall then be applied over the entire metal base flange which extends on to the roof, the top strip extending two (2) inches beyond the lower strip,

(Continued top of next column)

these strips to be not less than double the width of the flange and cemented solidly together and to the flange with pitch. Apply over the surface a mopping of pitch.

Cap Flashing shall be installed immediately so as to prevent seepage of water behind the base flashing.

- * 5 Ply roofing shall have three (3) reinforcing plies.
- ** 4 Ply roofing shall have two (2) reinforcing plies.
- ** 4 Ply roofing shall have (4) reinforcing plies.
- 3 Ply roofing shall have three (3) reinforcing plies.



NOTE: THIS DETAIL APPLIES TO CONCRETE, TILE, GYPSUM AND WOOD DECKS, EXCEPT THAT ON WOOD DECKS THE CANT STRIP IS TO BE WOOD.

Koppers Raggle Block Flashing Specification No. 102

KOPPERS RAGGLE BLOCK FLASHING SPECIFICATION No. 102

BRIEF SPECIFICATION (For Architects and Engineers)
The flashing shall be Raggle Block Type installed according to KOPPERS Specification No. 102.

DETAILED SPECIFICATIONS

APPLICATION. Extend all roofing plies of felt and mopings of pitch up the cant to the wall angle.

See that the flashing groove in the raggle block is free of all foreign material. Then apply a uniform coating of KOPPERS Type F Asphalt over the roofing and extend it full depth into the flashing groove. Next insert one (1) ply of KOPPERS 15-Lb. Asphalt Felt full depth into the Raggle Groove and extend it two (2) inches on to the roof deck. On top of the flashing reinforcement strip apply another uniform coating of KOPPERS Type F Asphalt and another flashing strip, this strip to extend on to roofing deck felts one (1) inch beyond the preceding strip. Repeat this application until a three (3) ply 15-Year Type or four (4) ply 20-Year Type reinforcement has been completed.

Felt reinforcement flashing strips shall not exceed ten (10) feet three (3) inches in length and there shall be a three (3) inch end lap between adjoining strips. A uniform coating of KOPPERS Type F Asphalt shall be applied between laps.

Each flashing reinforcement strip shall be set in separately and joints must be broken with the underlying flashing reinforcement strip.

The top of flashing reinforcement shall be nailed in the middle of the cant every ten (10) inches with one and one-half (1½) inch barbed roofing nails through flat tin discs.

Over the entire reinforcement strip, and into the full depth of the raggle apply a uniform coating of KOPPERS Type F Asphalt, into which embed one (1) layer of eighty-five (85) pounds Mineral Surfaced Roofing extending from the full depth of the raggle groove not less than three (3) inches on to the roof deck.

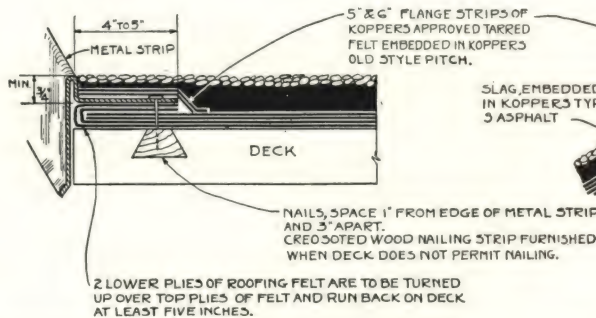
Mineral surfaced roofing strips shall not exceed ten (10) feet three (3) inches in length and there shall be a three (3) inch lap between adjoining strips. A uniform coating of KOPPERS Type F Asphalt shall be applied between laps.

Insert oakum into the full depth of the raggle groove, pressing firmly into place, then fill the raggle completely with KOPPERS Roof Cement.

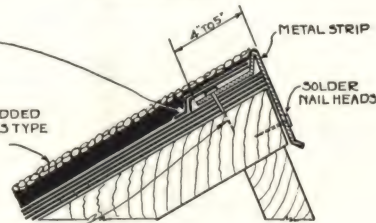
GENERAL. All asphalt felt and mineral surfaced roofing shall be free from wrinkles and buckles.

TYPICAL METAL FINISHING STRIPS

EAVE #1000

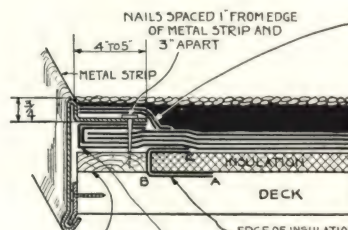


RIDGE #1001



**FOR GRAVEL AND
SLAG ROOFING
WITHOUT INSULATION**

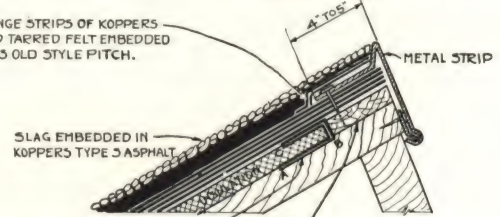
EAVE #1002



**FOR GRAVEL AND
SLAG ROOFING.
WITH INSULATION**

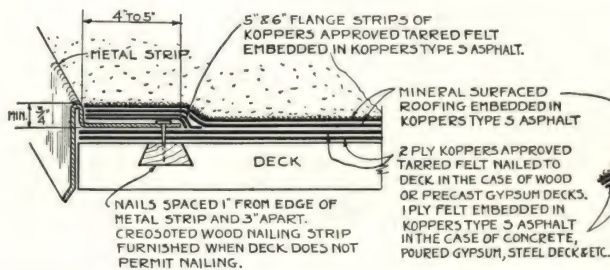
EDGE OF INSULATION TO BE SEALED WITH 2 PLIES TARRER FELT STRIPS, EXTENDING 6" UNDER INSULATION AND 5" OVER INSULATION. WITH CONCRETE, POURED GYPSUM, PRECAST CONCRETE AND BOOK TILE DECKS HOP WITH PITCH FROM POINTS A TO C. ON STEEL DECKS WITH KOPPERS TYPE 3 ASPHALT. WITH WOOD AND PRECAST GYPSUM DECKS HOP WITH PITCH FROM POINTS B TO C AND NAIL FELT STRIPS SECURELY TO DECK. WHEN THERE IS WATERPROOFING UNDER INSULATION EXTEND WATERPROOFING PLIES OF FELT AND HOPPINGS OF PITCH SO THAT THEY CAN BE TURNED BACK OVER THE TOP OF INSULATION 5".

RIDGE #1003

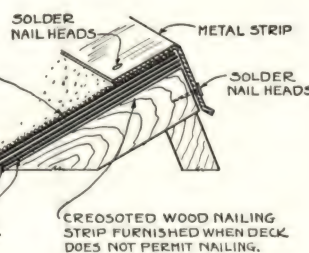


NOTE: CREOSOTED WOOD EDGING STRIP SECURELY FASTENED TO DECK CUT TO THE SAME WIDTH AS METAL FLANGE AND THE THICKNESS OF THE INSULATION.

SIDE EAVE #1004

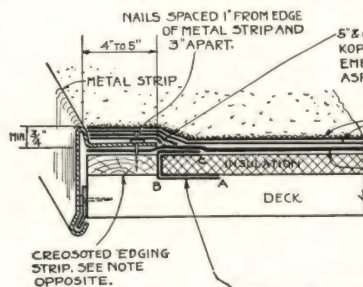


RIDGE #1005



**FOR MINERAL
SURFACED ROOFING
WITHOUT INSULATION**

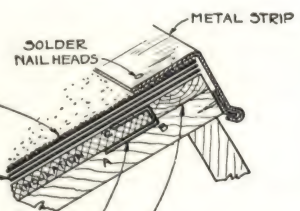
SIDE EAVE #1006



**FOR MINERAL
SURFACED ROOFING
WITH INSULATION**

EDGE OF INSULATION TO BE SEALED WITH 2 PLIES TARRER FELT STRIPS, EXTENDING 6" UNDER INSULATION AND 5" OVER INSULATION. WITH POURED CONCRETE, POURED GYPSUM, PRECAST CONCRETE, BOOK TILE AND STEEL DECKS HOP WITH KOPPERS TYPE 3 ASPHALT FROM POINTS A TO C. WITH WOOD OR PRECAST GYPSUM DECKS HOP WITH TYPE 3 ASPHALT FROM POINTS B TO C AND NAIL FELT STRIPS SECURELY TO DECK. WHEN THERE IS WATERPROOFING UNDER INSULATION EXTEND WATERPROOFING PLIES OF FELT AND HOPPINGS OF ASPHALT SO THAT THEY CAN BE TURNED BACK OVER THE TOP OF INSULATION 5".

RIDGE #1007



NOTE: CREOSOTED WOOD EDGING STRIP SECURELY FASTENED TO DECK CUT TO THE SAME WIDTH AS METAL FLANGE AND THE THICKNESS OF THE INSULATION.

DAMPPROOFING AND WATERPROOFING

Almost any concrete or masonry structure which is not effectively waterproofed eventually will show the destructive effect of water, to some degree. The cost

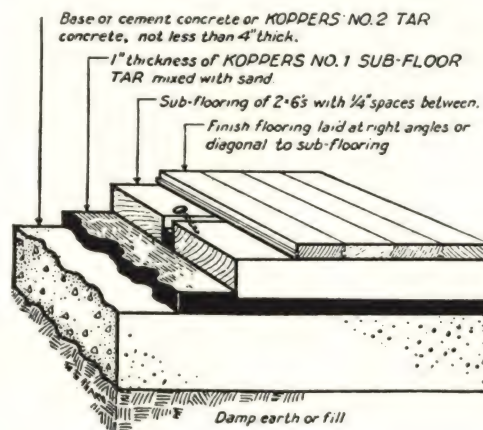
of waterproofing or dampproofing is negligible compared to the cost of the structure, yet it prolongs the life of the structure and insures the investment.

KOPPERS SUB-FLOOR TAR DAMPPROOFING

In basements where the ground is damp and it is desired to use a wood finish floor, an effective dampproofing is necessary. The earth should be leveled off to proper grade. If earth or cinder fill is used it should be puddled and rolled or tamped to thoroughly compact it. The sub-base may be either a cement-concrete slab installed in the usual way, or a slab of KOPPERS No. 2 SUB-FLOOR TAR concrete. A cubic yard of crushed stone or gravel passing a $2\frac{1}{4}$ " sieve but retained on a $\frac{1}{4}$ " sieve is mixed with approximately 10 gallons of KOPPERS No. 2 SUB-FLOOR TAR which has been heated. This should be thoroughly rolled or tamped and brought to accurate grade.

Over the slab the dampproofing course is placed. One cubic yard of clean torpedo sand is heated (210° to 250° F.) and mixed with 25 to 30 gallons of KOPPERS No. 1 SUB-FLOOR TAR at the same temperature. The mixture is spread evenly over the slab to a thickness of from $1\frac{1}{4}$ " to $1\frac{1}{2}$ " and leveled with a straight edge.

Well dried or treated planks are laid on this soft mixture before it cools and bedded by hammering, so that the coating compacts to a thickness of 1". If any plank is hammered below level, it is raised and more of the mixture applied beneath it. After the planks have been brought to proper level they are toe-nailed together. The sub-floor planks are preferably pressure treated with coal tar creosote meeting the Grade 1 specifications of the American Wood Preservers' As-



sociation. In food factories, creameries, etc., where the odor of creosote might be objectionable, the planks should be treated with a suitable salt preservative such as zinc chloride or Wolman salts. Planks to be creosoted should be dried before treatment. When a salt preservative is used, the planks should be dried after treatment, whether or not they were dried before treatment.

The finish floor is then laid at right angles or diagonal to the planks in the usual manner.

KOPPERS SPECIFICATION FOR THE INSTALLATION OF CREOSOTED WOOD BLOCK FLOORING

BRIEF SPECIFICATION (For Architects and Engineers)

All creosoted wood block flooring shall be laid in accordance with Koppers Specifications.

USES. Creosoted Wood Block Floors are used in machine shops, factories, trucking platforms, warehouses, and other places where a durable and smooth floor is desired. Creosoted wood block floors eliminate much of the noise usually found in manufacturing plants.

APPLICATION. KOPPERS Wood Block Pitch shall be heated to 275° F. and then flushed or poured over the concrete base in a thin uniform coating. (Approximately 7 pounds per square yard.)

On the hardened pitch surface the blocks shall be set tightly together with the fiber of the wood vertical, in straight parallel courses with the length at right angles to the line of traffic. Space for expansion joints one (1) inch wide shall be left against the walls surrounding the entire

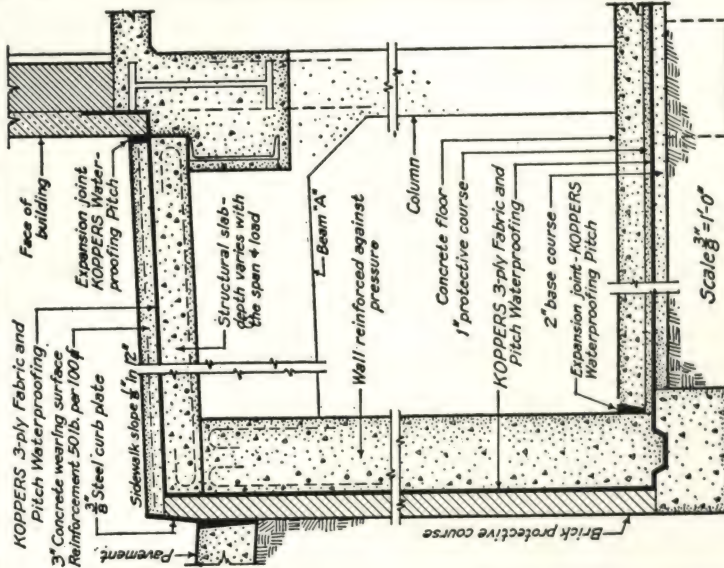
floor, as well as around all columns and other obstructions.

After the blocks have been properly placed, KOPPERS Wood Block Pitch (heated to 275° F.) shall be poured into all spaces left for expansion joints so as to fill them up to the floor level. The hot pitch shall then be flushed over the floor using a rubber edged squeegee to force it into the crevices between the blocks. Not more than a light film of pitch should be left on the surface of the floor. The surface of the floor shall then be covered with sharp, fine sand, which shall be permitted to remain under traffic for a week or ten days and then removed. The light film of pitch on the surface of the blocks will wear off rapidly under traffic. Approximately eight (8) pounds of pitch per square yard will be required for filler—provided footage of expansion joints in the floor is normal.

Note—Blocks may be laid on worn out concrete floors and other uneven surfaces if a sand mastic cushion is provided. Write for details.

Sheet No. **F9**
KOPPERS
PRODUCTS CO.
PITTSBURGH

PENCIL POINTS DATA SHEETS
**WATERPROOFING OF
SIDEWALK VAULT**
Prepared by Don Graf, B.S., M.Arch.

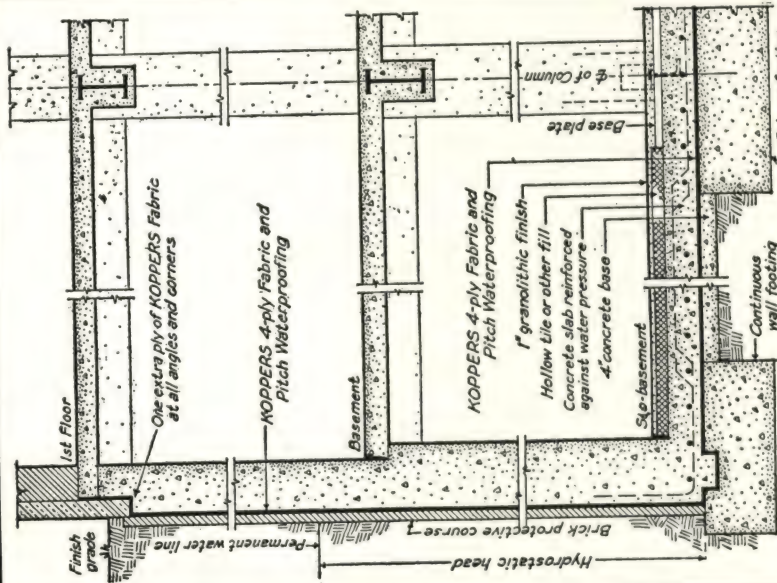


SECTION THRU
BEAM "A"

The problem involved in constructing sidewalk vaults is to provide for movement of the concrete to eliminate cracking, and at the same time to exclude water so that the space may be usable. A 1\"/>

Sheet No. **F9**
KOPPERS
PRODUCTS CO.
PITTSBURGH

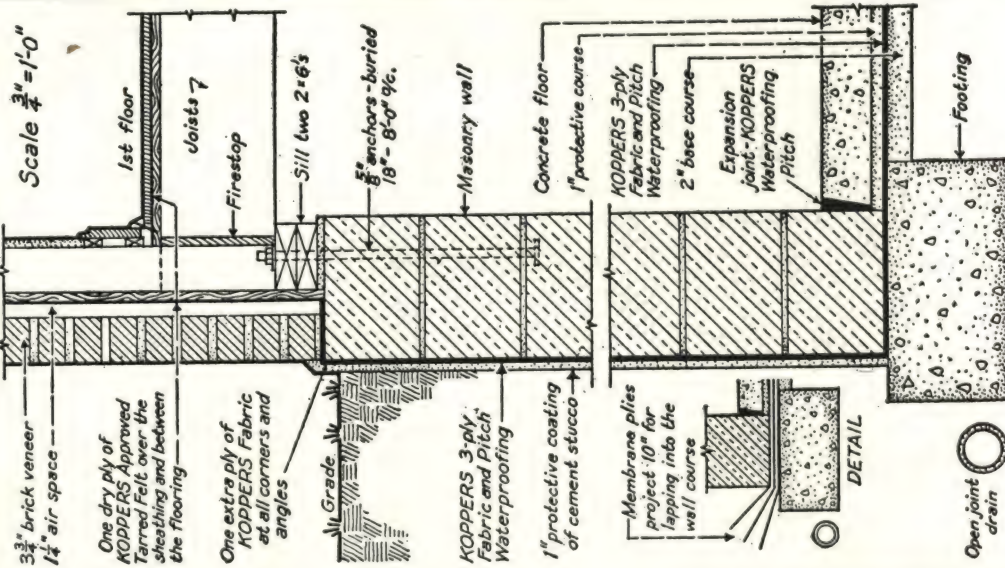
PENCIL POINTS DATA SHEETS
**WATERPROOFING OF
DEEP FOUNDATIONS**
Prepared by Don Graf, B.S., M.Arch.



In the construction of deep basements having unfavorable water conditions, the waterproofing method is shown here. The KOPPERS 4-ply Fabric and Pitch Waterproofing membrane will withstand a hydrostatic head up to 18'. From 18' to 25' 5 plies are used. A sheet of 20-oz. soft rolled copper should be placed between the plies beneath all columns, posts or walls under which the pressure exceeds 400 lbs. per sq. inch. The sub-basement floor is reinforced as a flat slab to resist the upward pressure of the water. Inverted beams may be used, but these necessitate a greater amount of fill to bring the construction to a level to receive the wearing surface. If piles are used, the footings shown above become the pile cap-pings. No dowels need be run through the membrane.

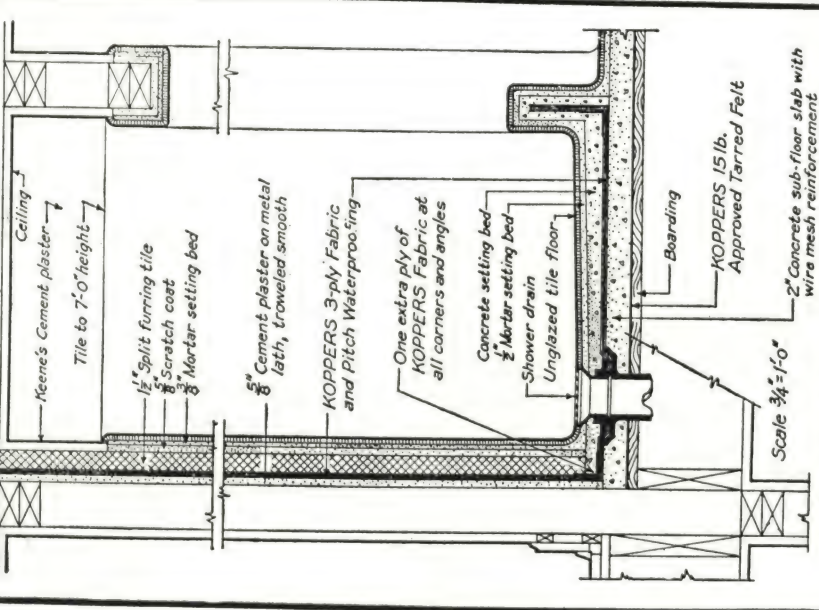
Sheet No. **F9**
KOPPERS
PRODUCTS CO.
PITTSBURGH

PENCIL POINTS DATA SHEETS
**WATERPROOFING OF
RESIDENCE FOUNDATIONS**
Prepared by Don Graf, B.S., M.Arch.



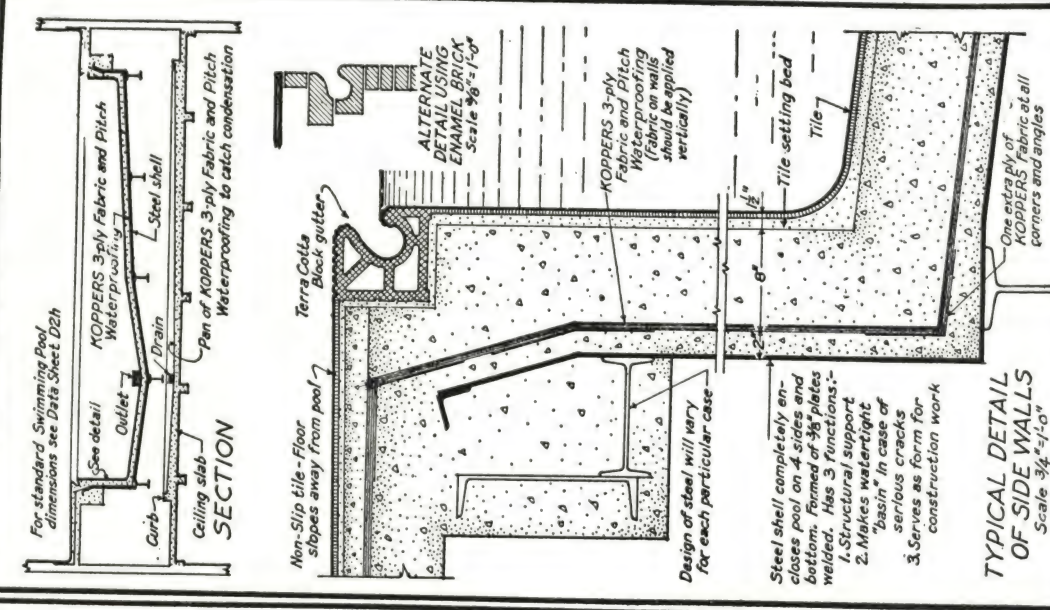
DETAIL
Open joint
drain

PENCIL POINTS DATA SHEETS SHOWER BATH CONSTRUCTION Prepared by Don Graf, B.S., M.Arch.	Sheet No. D6 KOPPERS PRODUCTS CO. PITTSBURGH
PENCIL POINTS DATA SHEETS INDOOR SWIMMING POOL Prepared by Don Graf, B.S., M.Arch.	Sheet No. D2 KOPPERS PRODUCTS CO. PITTSBURGH
PENCIL POINTS DATA SHEETS SUBTERRANEAN TUNNEL TO CONNECT BUILDINGS Prepared by Don Graf, B.S., M.Arch.	Sheet No. F9 KOPPERS PRODUCTS CO. PITTSBURGH

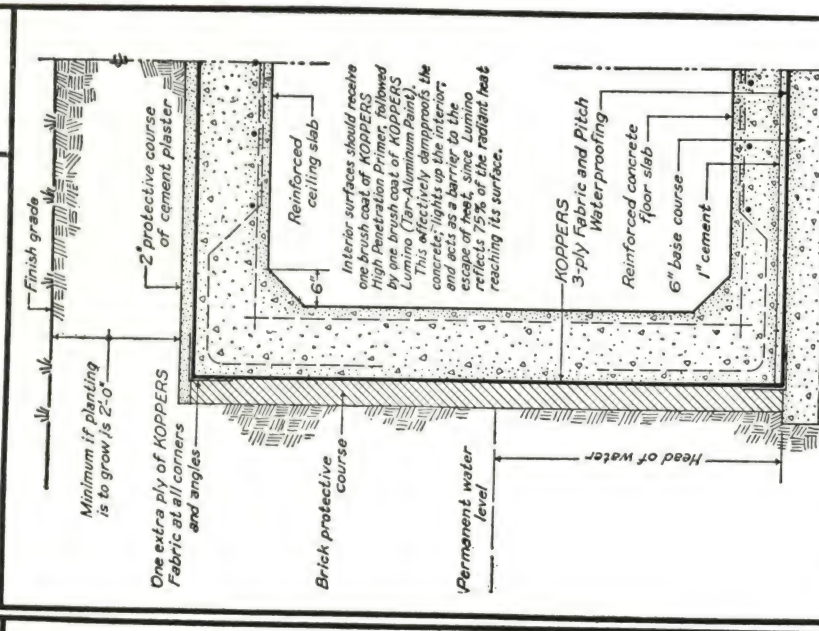


The usual sizes for shower stalls are as follows:—30 x 36, 30 x 42, 36 x 36, 36 x 42, 42 x 42. Where space permits, the largest size given is desirable. Showers less than 36 x 36 in the clear should only be planned when space conditions make it mandatory. The door opening may be closed either with a water-proof curtain or any of the standard shower stall doors having ventilating panels.

The floor of the shower should be of an unglazed or abrasive tile, to prevent slipping. Glazed or unglazed tiles may be used for the walls at the discretion of the designer. Floor drains vary from $1\frac{1}{2}"$ to 3" wastes. The larger the better.



TYPICAL DETAIL OF SIDE WALLS
Scale: $3\frac{1}{4}" = 1'-0"$



Frequently it is necessary to construct subterranean tunnels from one building to another, either for a passageway for circulation of people, or as a conduit to contain pipes and ducts. If the soil will retain ground water, or if the passage extends below the permanent water level, an effective waterproofing is necessary as shown above. This forms an unbroken envelope through which moisture is unable to penetrate.

The thickness of the floor slab and the reinforcing will depend upon the span and the head of water to be resisted. The thickness and reinforcing of the walls depend upon the height and the water head. The detail of the roof or ceiling slab will depend upon the span and the weight of earth to be sustained.

OTHER PRODUCTS

ROAD MATERIALS

Koppers Tarmac—

For construction, maintenance and repair of highways, streets, private driveways, plant roads, pavements, playgrounds, etc.

WOOD PRESERVATIVES

Koppers Coal Tar Creosote
Koppers Creosote Coal Tar Solutions
Koppers Anthracene Oils
Koppers Shingle Stain Oils

PITCH COKE

A low ash carbon for the chemical and metallurgical industries

CRUDE NAPHTHALENE

Standard 74° and 76° grades

CRUDE TAR

Coke Oven Tar
Horizontal Retort Tar

Vertical Retort Tar
Water Gas Tar

REFINED TAR

Mold Wash Tar
Fish Net Tar

Pipe Dip
Saturating Tar

TAR ACIDS

AND

TAR ACID OILS

Phenol (82% and 90%)
Cresol (U. S. P., 3° Meta-Para
Resin and plasticizer
grades)
Cresylic Acid (Disinfectant and
insecticide grades)
Tar Acid Oils (15-25-35%)
Flotation Oils

LIGHT OILS

Benzol Xylol
Toluol Solvent Naphtha

AGRICULTURAL PRODUCT

Tree Spray Oil

BITUMINOUS PAINTS

Koppax Black Paints
Lumino Aluminum Paint
Heat Resisting Paints
Acid-Proof Paints
Paint Base Tars and Pitches

KOPPERS PRODUCTS COMPANY

GENERAL OFFICES

Koppers Building, PITTSBURGH, PA.

SALES OFFICES

NEW YORK, N. Y., Koppers Building, Harrison Turnpike, Kearny, N. J.
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PROVIDENCE, R. I., Industrial Trust Building
CHICAGO, ILL., 39th Street and 52nd Avenue, Cicero, Ill.
WOODWARD, ALA. (Phone and Wire—Birmingham, Ala.)
ST. LOUIS, MO., 4000 Bingham Avenue

PLANTS

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CICERO, ILL.
FOLLANSBEE, W. VA.

WOODWARD, ALA.

HAMILTON, OHIO
KEARNY, N. J.
NEW HAVEN, CONN.
PROVIDENCE, R. I.

YOUNGSTOWN, OHIO

ST. LOUIS, MO.
ST. PAUL, MINN.
SWEDELAND, PA.
UTICA, N. Y.



Genuine
RUBEROID
BONDED
BUILT-UP
ROOFS

The RUBEROID Co.

ROOFING MANUFACTURERS FOR OVER FORTY YEARS

RUBEROID — CONTINENTAL — SAFEPAK

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Offices and Factories: New York, N. Y. — Chicago, Ill.
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A WORD ABOUT GENUINE RU-BER-OID BONDED BUILT-UP ROOFS

BUILT OF EITHER

Asbestos—Coal Tar Pitch and Felt—Asphalt

The RUBEROID Co., with over 40 years of experience in the manufacture of quality roofing products, is now supplying Ruberoid Bonded Built-up Roofs in all of the popular types, Asbestos, Coal Tar Pitch and Felt, and Asphalt. The factories of The RUBEROID Co., are producing the materials from which these roofs are constructed.

Ruberoid specifications comprising all types of built-up roofs enable architects to specify the type of roof best adapted to construction and climatic conditions. Ruberoid Bonded Built-up Roofs provide for the

architect, builder and owner, a guarantee of both workmanship and labor for 10, 15 or 20 years, according to the specifications used. Ruberoid Bonded Roofs are applied only by approved roofing contractors and the guarantee is backed by a National Surety Bond.

Tabulated below is a chart showing the specifications generally used for various types of roofs—the guarantees applying and other essential information.

Should supplementary information be desired from our Engineering Department, write or telephone our nearest office.

The RUBEROID Co.

ROOFING AND BUILDING PRODUCTS

OFFICES

5333 South Western Avenue
CHICAGO

BALTIMORE
MOBILE

ERIE
MILLIS, MASS.

500 Fifth Avenue
NEW YORK

TARRED FELT AND PITCH BUILT-UP ROOFS, SLAG OR GRAVEL FINISH RAG FELT TAR SATURATED AND PITCH

SPECIFICATION NUMBER	DESIGNATION	CONSTRUCTION OF DECK	LIMITATION OF ROOF PITCH	SURFACE FINISH	TYPE OF ROOFING FELT INVOLVED	UNDERWRITERS' LAB. INC., RATING	NUMBER OF PLIES OF FELT	NUMBER OF MOP- PINGS OF PITCH	TOTAL WEIGHT PER SQUARE		TERM OF GUARANTY BONDED YEARS
									GRAVEL SURFACED	SURFACED SLAG	
151	PITCH AND FELT	WOOD	2"	SLAG OR GRAVEL	TARRED RAG FELT	A	ONE LAYER SHEATHING PAPER FOUR PLIES NO. 15 TARRED FELT	3	596	496	15
152	"	CONCRETE	1"	"	"	A	THREE PLIES NO. 15 TARRED FELT	4	625	525	15
151SD	"	WOOD	2"	"	"	A	ONE LAYER SHEATHING PAPER FOUR PLIES NO. 15 TARRED FELT	4	646	546	15
152SD	"	CONCRETE	1"	"	"	A	THREE PLIES NO. 15 TARRED FELT	5	675	575	15
202	"	WOOD	2"	"	"	A	ONE LAYER SHEATHING PAPER FIVE PLIES NO. 15 TARRED FELT	4	637	537	20
203	"	CONCRETE	1"	"	"	A	FOUR PLIES NO. 15 TARRED FELT	5	665	565	20
206	"	CONCRETE	1"	PROM- ENADE TILE	"	A	FIVE PLIES NO. 15 TARRED FELT WEIGHT PER SQUARE 305 LBS.	6			20
202SD	"	WOOD	2"	SLAG OR GRAVEL	"	A	ONE LAYER SHEATHING PAPER FIVE PLIES NO. 15 TARRED FELT	5	687	587	20
203SD	"	CONCRETE	1"	"	"	A	FOUR PLIES NO. 15 TARRED FELT	6	715	615	20

**ASPHALT BUILT-UP ROOFS—SLAG OR GRAVEL FINISH
RAG FELT—ASPHALT SATURATED AND ROOFING ASPHALT**

SPECIFICATION NUMBER	DESIGNATION	CONSTRUCTION OF DECK	LIMITATION OF ROOF PITCH	SURFACE FINISH	TYPE OF ROOFING FELT INVOLVED	UNDERWRITERS' LAB. INC. RATING	NUMBER OF PLIES OF FELT	NO. OF MOPPINGS OF ASPHALT	TOTAL WEIGHT PER SQUARE		TERM OF GUARANTY BOND—YEARS
									GRAVEL SURFACED	SLAG SURFACED	
153	ASPHALT FELT	WOOD	½" to 3"		ASPHALT FELT	A	FOUR NO. 15 FELTS	3	566	466	15
154	ASPHALT FELT	CONCRETE	½" to 3"		ASPHALT FELT	A	THREE NO. 15 FELTS	4	585	485	15
204	ASPHALT FELT	WOOD	½" to 3"	SLAG OR GRAVEL	ASPHALT FELT	A	FIVE NO. 15 FELTS	4	607	507	20
205	ASPHALT FELT	CONCRETE	½" to 3"		ASPHALT FELT	A	FOUR NO. 15 FELTS	5	625	525	20

**ALL-ASBESTOS FELT BUILT-UP ROOFS—SMOOTH FINISH
ASBESTOS FELT—ASPHALT SATURATED AND ROOFING ASPHALT**

SPECIFICATION NUMBER	DESIGNATION	CONSTRUCTION OF DECK	LIMITATION OF ROOF PITCH	SURFACE FINISH	TYPE OF ROOFING FELT INVOLVED	UNDERWRITERS' LAB. INC. RATING	NUMBER OF PLIES OF FELT	NO. OF MOPPINGS OF ASPHALT	SURFACE	TOTAL WEIGHT PER SQUARE	TERM OF GUARANTY BOND—YEARS
150	ASBESTOS	WOOD	½" to 6"	SMOOTH	ASBESTOS	A	ONE NO. 60 ASBESTOS TWO NO. 20 ASBESTOS	3	SMOOTH	172	15
158	ASBESTOS	INSULATION	¼" to 6"	SMOOTH	ASBESTOS	*	THREE NO. 20 ASBESTOS	4	SMOOTH	161	15
200	ASBESTOS	WOOD	½" to 6"	SMOOTH	ASBESTOS	A	ONE NO. 60 ASBESTOS TWO NO. 20 ASBESTOS	3	SMOOTH	172	20
201	ASBESTOS	CONCRETE	½" to 6"	SMOOTH	ASBESTOS	A	ONE NO. 60 ASBESTOS TWO NO. 20 ASBESTOS	4	SMOOTH	215	20
210	ASBESTOS	INSULATION	¼" to 6"	SMOOTH	ASBESTOS	A	FOUR NO. 20 ASBESTOS	5	SMOOTH	206	20

*Underwriters' Lab., Inc.: Rating—Wood Deck Class C, Non Combustible Deck Class B.

**COMBINATION ASBESTOS AND ASPHALT FELT—SMOOTH OR MINERAL FINISH
ASBESTOS AND RAG FELTS—ASPHALT SATURATED AND ROOFING ASPHALT**

SPECIFICATION NUMBER	DESIGNATION	CONSTRUCTION OF DECK	LIMITATION OF ROOF PITCH	SURFACE FINISH	TYPE OF ROOFING FELT INVOLVED	UNDERWRITERS' LAB. INC. RATING	NUMBER OF PLIES OF FELT	NO. OF MOPPINGS OF ASPHALT	SURFACED SMOOTH OR CRUSHED SLATE	TOTAL WEIGHT PER SQUARE	TERM OF GUARANTY BOND—YEARS
100	COMBINATION	WOOD	½" to 6"	SMOOTH	RAG & ASBESTOS	C	ONE NO. 30 RAG FELT TWO NO. 20 ASBESTOS	3	SMOOTH	149	10
101	COMBINATION	CONCRETE	½" to 6"	SMOOTH	RAG & ASBESTOS	A	ONE NO. 30 RAG FELT TWO NO. 20 ASBESTOS	4	SMOOTH	182	10
102	MINERAL SURFACED	WOOD	3" to 6"	CRUSHED SLATE	RAG	C	TWO NO. 15 RAG FELT TWO NO. 55 DUBL-COVERAGE MINERAL SURFACED ROOFING	2	DUBL- COVERAGE MINERAL SURFACED ROOFING	194	10
103	MINERAL SURFACED	CONCRETE	3" to 6"	CRUSHED SLATE	RAG	C	ONE NO. 15 RAG FELT TWO NO. 55 DUBL-COVERAGE MINERAL SURFACED ROOFING	3	DUBL- COVERAGE MINERAL SURFACED ROOFING	218	10
156	COMBINATION	WOOD	½" to 6"	SMOOTH	RAG & ASBESTOS	C	ONE NO. 40 RAG FELT TWO NO. 20 ASBESTOS	3	SMOOTH	149	15
157	COMBINATION	CONCRETE	½" to 6"	SMOOTH	RAG & ASBESTOS	A	TWO NO. 15 RAG FELT TWO NO. 20 ASBESTOS	5	SMOOTH	212	15
208	COMBINATION	WOOD	½" to 6"	SMOOTH	RAG & ASBESTOS	B	ONE NO. 40 RAG FELT THREE NO. 20 ASBESTOS	4	SMOOTH	199	20
209	COMBINATION	CONCRETE	½" to 6"	SMOOTH	RAG & ASBESTOS	A	TWO NO. 15 RAG FELT THREE NO. 20 ASBESTOS	6	SMOOTH	232	20

ASBESTOS FELT AND ASPHALT FELT, SMOOTH FINISH ROOF

For Use Over Board Sheathing

For Inclines Not Exceeding 6-in. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 100 (COMBINATION)—10-YEAR BOND

Underwriters' Laboratories Class C Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 10-year Guaranty Bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Asphalt Felt—Ruberoid No. 30 Asphalt Felt.

Asbestos Felt—Ruberoid No. 20 Asphalt-saturated Asbestos Felt.

Asphalt—Ruberoid Bond Roofing Asphalt.

Work by Others

The roof deck must be constructed of seasoned lumber, dressed on upper side, dry and free from large cracks and knot holes. Roof boards must be securely nailed in place, leaving no nail heads above the wood surfaces. Surfaces must be properly graded to outlets and cant strips provided in the angle formed between the roof and vertical surfaces.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the board surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

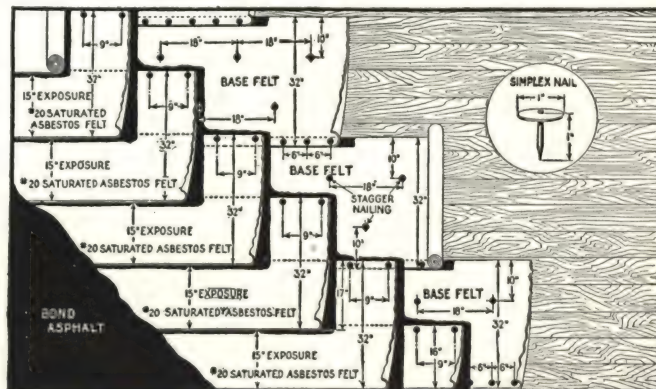
Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Lay one ply of No. 30 Asphalt Felt, lapping sheets 2-in. at edges and not less than 6-in. at end laps. Nail at 6-in. intervals along the lap and at 18-in. intervals along lines 10-in. from each edge of each sheet, the latter nails being staggered. This felt shall be turned up not less than 4-in. along all walls and vertical surfaces.

Second—Over the entire surface lay two plies of No. 20 Saturated Asbestos Felt, embedding each sheet in Asphalt, lapping each sheet 17-in. over the preceding one and rolling each sheet immediately behind the mop to insure proper adhesion of all sheets. In no place shall felt touch felt. Each sheet shall be nailed along the back edge only from 1-in. to 1½-in. down, at intervals of approximately 18 in. These felts shall be cut off at the angle of the roof deck and all vertical surfaces.



Third—Over the entire surface mop a uniform coating of Asphalt, using not more than 20 lb. per 100 sq. ft.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

One ply Ruberoid No. 30 Asphalt Felt.....	32 lb.
Two Plies Ruberoid No. 20 Saturated Asbestos Felt	40 lb.
Ruberoid Bond Roofing Asphalt.....	75 lb.
Simplex Nails	2 lb.

Total Approximate Weight, 100 sq. ft.....149 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt. Asphalt shall not be heated to exceed 450° F.

All nailing of roofing to board surfaces shall be done with Simplex flat head roofing nails or with ⅞-inch galvanized roofing nails, driven through flat tin discs.

All roofing work shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—Insulated Roofs—If this roof is to be applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing and of a type that will retain nails. Use the method of application as shown in Ruberoid Specification Number 101.

No more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of the insulation at a distance not greater than one width of insulating material from walls, curbs and openings.

Note 2—Leader Heads, Vents, etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

Bonds

The Manufacturer's Surety Bond Guarantee as issued by the National Surety Corporation of New York, N. Y., covering a period of 10 years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the manufacturer.

ASBESTOS FELT AND ASPHALT FELT, SMOOTH FINISH ROOF

**For Use Over Poured Concrete, Poured Gypsum, Gypsum Block,
Precast Concrete Tile, Book Tile or Approved Insulation**

For Inclines Not Exceeding 6 In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 101 (COMBINATION)—10-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 10-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Primer—Ruberoid Concrete Primer.

Asphalt Felt—Ruberoid No. 30 Asphalt Felt.

Asbestos Felt—Ruberoid No. 20 Asphalt-saturated Asbestos Felt.

Asphalt—Ruberoid Bond Roofing Asphalt.

Work by Others

The roof deck must be thoroughly dry, smooth and free from loose material, and must be properly graded to outlets.

For inclines exceeding 3-in. to the foot, if the deck is of concrete, wood nailing strips must be provided at proper intervals.

Coves shall be provided in the angle between the roof and the vertical surfaces.

Where Book Tile is used, the surface of the tile must be covered with portland cement mortar 1-in. thick with a smooth and even finish.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Coat the entire surface with Primer applied cold, allowing same to dry thoroughly. Where plastic material is used to caulk the joints of blocks, the coating of primer shall be held back 2-in. from all joints.

Second—Over the entire surface lay one ply of No. 30 Asphalt Felt in Roofing Asphalt, lapping each sheet 2-in. over the preceding one at edges and not less than 6-in. at end laps. Roll each sheet immediately behind the mop to insure proper adhesion of all sheets. Mopping and rolling shall be so done as to secure a continuous bed of asphalt of uniform thickness. In no place shall felt touch felt or roof deck. Felts shall be cut off at the angle of the roof deck and all vertical surfaces.

On inclines exceeding 3-in. to the foot these sheets shall be nailed at intervals of 9-in. along the lap into the nailing strips.

Note: Where poured gypsum or precast gypsum blocks are used, all three plies of felt shall be nailed as specified in the case of board decks.

Third—Over the entire surface lay in asphalt two plies of No. 20 Saturated Asbestos Felt, lapping each sheet 17-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot asphalt. In no place shall felt touch felt.

On inclines exceeding 3-in. to the foot, sheets shall be nailed at intervals of 18-in. along the nailing strips or back edge.

These felts shall be cut off at the angle of the roof deck and vertical surfaces.

Fourth—Over the entire surface mop a uniform coating of asphalt, using not more than 20 lb. per 100 sq. ft.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Ruberoid Concrete Primer (1 gal.)	10 lb.
One Ply Ruberoid No. 30 Asphalt Felt	32 lb.
Two Plies Ruberoid No. 20 Asphalt-saturated Asbestos Felt	40 lb.
Ruberoid Bond Roofing Asphalt	100 lb.

Total Approximate Weight 100 sq ft. 182 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt. Asphalt shall not be heated to exceed 450° F.

All nailing of roofing shall be done with Simplex flat head roofing nails or with 7/8-inch galvanized roofing nails, driven through flat tin discs.

All roofing work shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—Insulated Roofs—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

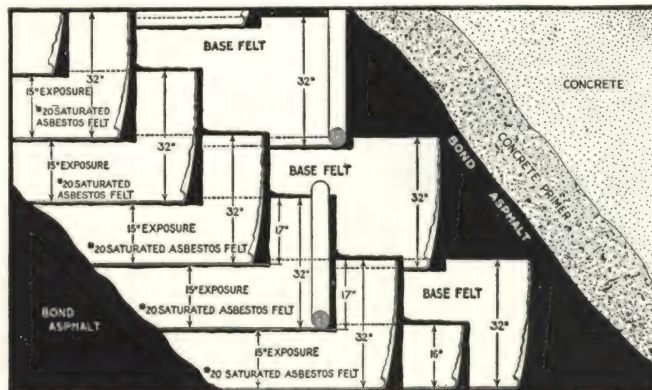
Note 2—Leader Heads, Vents, etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

Bond

The Manufacturer's Surety Bond Guaranty as issued by the National Surety Corp. of New York, N. Y., covering a period of 10 years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the Manufacturer.



COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH ROOF

For Use Over Board Sheathing with or Without Approved Insulation and Precast Gypsum Blocks

For Inclines Not Exceeding 2 In. per Ft.

SPECIFICATION NO. 151—15-YEAR BOND*

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 15-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

in size, dry and free from dirt. If the roof is applied during cold weather, or the slag or gravel is damp, it shall be heated and dried immediately before application.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

If over boards, the roof deck shall be constructed of seasoned lumber, smooth and securely nailed, and free from large cracks or knot holes. It shall be properly graded to outlets and swept clean and free from all loose material.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

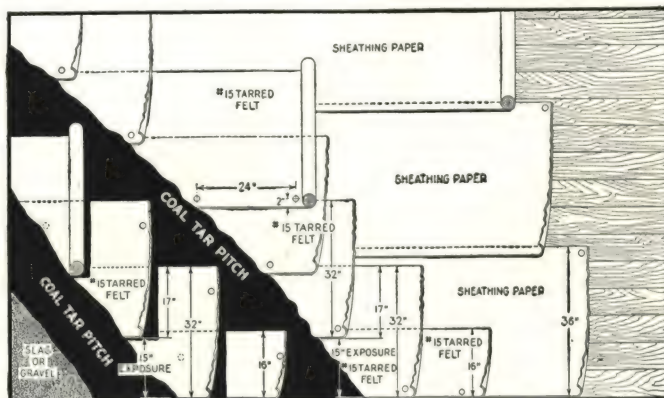
First—Lay one thickness of sheathing paper, weighing not less than 5 lb. per 100 sq. ft., lapping the sheets at least 1-in. If Precast Gypsum Block is used, sheathing paper may be omitted.

Second—Over the entire surface lay two plies of No. 15 Tarred Felt, lapping each sheet 17-in. over the preceding one, and turning up these felts not less than 4-in. along all vertical surfaces. Nail as often as is necessary to secure, until the remaining felt is laid.

Third—Coat the entire surface uniformly with Coal Tar Pitch.

Fourth—Over the entire surface lay two plies of No. 15 Tarrd Felt, lapping each sheet 17-in. over the preceding one, mopping with Coal Tar Pitch the full 17-in. on each sheet, so that in no place shall felt touch felt. The back edge of each sheet shall be nailed at intervals of 24-in. at a distance not greater than 6-in. from back edge of sheet. Such nailing as is necessary shall be done so that all nails are covered by not less than one ply of felt. The felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Fifth—Over the entire surface pour a uniform coating of Coal Tar Pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq. ft. The gravel or slag shall be 1/4-in. to 5/8-in.



Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

One-layer Sheathing Paper.....	5 lb.
Four Plies Ruberoid No. 15 Tarred Felt.....	65 lb.
Ruberoid Coal Tar Pitch.....	125 lb.
Simplex Nails	1 lb.
Roofing Gravel	400 lb.
or	
Roofing Slag	300 lb.

Total Approximate Weight.	{ gravel surface.....	596 lb.
	{ slag surface.....	496 lb.

Felt shall be laid without wrinkles or buckles. Pitch shall not be heated to exceed 400° F.

All nailing of roofing shall be done with Simplex flat head roofing nails or with 7/8-inch galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—Insulated Roofs—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs, and other openings.

Note 2—Leader Heads, Vents, etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

Bond

The Manufacturer's Surety Bond Guaranty as issued by the National Surety Corp. of New York, N. Y., covering a period of 15 years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the Manufacturer.

*SPECIFICATION NO. 153—ASPHALT FELT AND ASPHALT WITH SLAG OR GRAVEL SURFACE

15-Year Bond—Underwriters' Class A Rating—For inclines not exceeding 4-in. per ft.

Construction identical with No. 151, except that no sheathing paper is required.

COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH ROOF

For Use Over Poured Concrete, Poured Gypsum, Precast Concrete
Tile or Book Tile with or Without Approved Insulation

For Inclines Not Exceeding 1-in. per Ft.

SPECIFICATION NO. 152—15-YEAR BOND*

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 15-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

The roof deck shall be thoroughly dry, smooth and free from loose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with smooth and even finish.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Coat the deck uniformly with Coal Tar Pitch. If Precast Concrete Tile is used, the surface shall be spot or strip mopped.

Second—Over the entire surface lay three plies of No. 15 Tarred Felt, lapping each sheet 22-in. over the preceding one and mopping with Coal Tar Pitch the full 22-in. on each sheet so that in no place shall felt touch felt. The felt shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface pour a uniform coating of Coal Tar Pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq ft. The gravel or slag shall be from ¼-in. to ⅝-in. in size, dry and free from dirt.

If the roof is applied dur-

ing cold weather, or slag or gravel is damp, it shall be heated and dried immediately before application.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Three Plies Ruberoid No. 15 Tarred Felt.....	50 lb.
Ruberoid Coal Tar Pitch.....	175 lb.
Roof Gravel	400 lb
or	
Roofing Slag	300 lb.

Total Approximate Weight.	{gravel surface...625 lb.
	{slag surface .....525 lb.

All felt shall be laid without wrinkles or buckles. Pitch shall not be heated to exceed 400° F.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—Insulated Roofs—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails.

Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

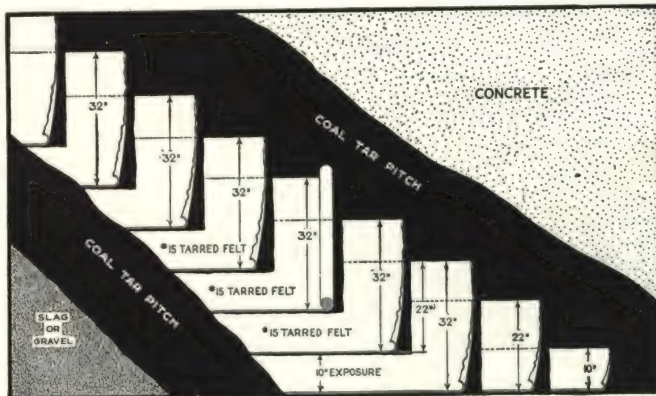
Note 2—Leader Heads, Vents, etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

Bond

The Manufacturer's Surety Bond Guaranty as issued by the National Surety Corp. of New York, N. Y., covering a period of 15 years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the Manufacturer.



*SPECIFICATION NO. 154—ASPHALT FELT AND ASPHALT WITH SLAG OR GRAVEL SURFACE

15-Year Bond—Underwriters' Class A Rating—For inclines not exceeding 3-in. per ft.

Construction Identical with No. 152, except that a concrete primer is used.

ASBESTOS FELT AND ASPHALT SMOOTH FINISH ROOF

For Use Over Board Sheathing

For Inclines Not Exceeding 6 In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 200—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Asbestos Base-Felt—Ruberoid No. 60 Asbestos Base-Felt.

Asbestos Felt—Ruberoid No. 20 Asphalt-saturated Asbestos Felt.

Asphalt—Ruberoid Bond Roofing Asphalt.

Work by Others

The roof deck must be constructed of seasoned lumber, dressed on upper side, dry and free from large cracks and knot holes. Roof boards must be securely nailed in place, leaving no nail heads above the wood surfaces. Surfaces must be properly graded to outlets, and cant strips provided in the angle formed between the roof and vertical surfaces.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Lay one ply of No. 60 Saturated Asbestos Base-Felt, lapping each sheet 2-in. at edges and not less than 6-in. at end laps. Nail at 6-in. intervals along the lap, and also at intervals of 18-in. on a line 10-in. from each edge of the sheet, staggering the nails. The felt shall be turned up not less than 4-in. along all vertical surfaces.

Second—Over the entire surface embed in Asphalt two plies of No. 20 Saturated Asbestos Felt, lapping each sheet 17-in. over the preceding one, rolling each sheet immediately behind the mop to insure a uniform coating of hot Asphalt so that in no place shall felt touch felt. Each sheet shall be nailed along the back edge from 1 to 1½-in. down at intervals of approximately 18-in. These felts shall be cut off at the angle of the roof deck and vertical surfaces.

Third—Over the entire surface mop a uniform coating of Asphalt using not more than 20 lb. per 100 sq. ft.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

One Ply Ruberoid No. 60 Asbestos Base-Felt.....	55 lb.
Two Plies Ruberoid No. 20 Asphalt-saturated	
Asbestos Felt	40 lb.
Ruberoid Bond Roofing Asphalt.....	75 lb.
Simplex Nails	2 lb.

Total Approximate Weight per 100 sq. ft.....172 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt. The Asphalt shall not be heated to exceed 450° F.

All nailing of roofing to board surfaces shall be done with Simplex flat head roofing nails or with ⅞-inch galvanized roofing nails driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—Insulated Roofs—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

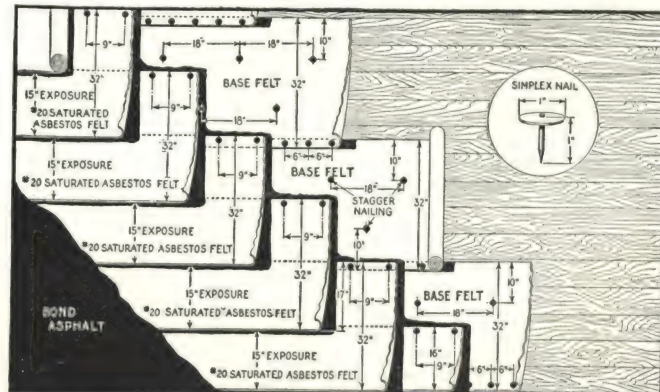
Note 2—Leader Heads, Vents, Etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

Bond

The Manufacturer's Surety Bond Guaranty as issued by the National Surety Corp. of New York, N. Y., covering a period of twenty years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the Manufacturer.



ASBESTOS FELT AND ASPHALT SMOOTH FINISH ROOF

**For Use Over Poured Concrete, Poured Gypsum, Gypsum Block,
Precast Concrete Tile, Book Tile or Approved Insulation**

For Inclines Not Exceeding 6 In. per Ft. (Not to Be Used on True Level Decks)

SPECIFICATION NO. 201—20-YEAR BOND

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Concrete Primer—Ruberoid Concrete Primer.

Asbestos Base-Felt—Ruberoid No. 60 Asbestos Base-Felt.

Asbestos Felt—Ruberoid No. 20 Asphalt-saturated Asbestos Felt.

Asphalt—Ruberoid Bond Roofing Asphalt.

Work by Others

The roof deck shall be thoroughly dry, smooth and free from loose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with a smooth and even finish.

Where poured gypsum or precast gypsum blocks are used, all felt shall be nailed as required when the roof deck is of boards.

For inclines exceeding 3-in. to the foot, if the deck is of concrete, wooden nailing strips must be provided at proper intervals.

Coves shall be provided in the angle formed between the roof and vertical surfaces.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Coat the entire surface with Concrete Primer applied cold and allow same to dry thoroughly. Where plastic material is used to caulk the joints of blocks, the coating of primer shall be held back 2-in. from all joints.

Second—Over the entire surface embed in Ruberoid Bond Asphalt one ply of No. 60 Asbestos Base-Felt, lapping each sheet 2-in. over the preceding one at the edges and not less than 6-in. at end laps. Nail at intervals of 12-in. along the laps into the nailing strip. All felts shall be cut off at the angle of the roof deck and all walls or vertical surfaces.

Third—Over the entire surface embed in Ruberoid Bond Asphalt two plies of No. 20 Asphalt-saturated Asbestos Felt, lapping each sheet 17 in. over the preceding one, rolling each sheet immediately behind

the mop to insure a uniform coating of hot asphalt so that in no place shall felt touch felt.

On inclines exceeding 3-in. to the foot, these sheets shall be nailed 6-in. from the back edge at intervals of 24-in. All felts shall be cut off at the angle of the roof deck and all walls or vertical surfaces.

Fourth—Over the entire surface mop a uniform coating of Asphalt, using not more than 20 lb. per 100 sq. ft.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Ruberoid Concrete Primer (1 gal.)	10 lb.
One Ply Ruberoid No. 60 Asbestos Base-Felt	55 lb.
Two Plies Ruberoid No. 20 Asphalt-saturated Asbestos Felt	40 lb.
Ruberoid Bond Roofing Asphalt	110 lb.

Total Approximate Weight per 100 sq. ft. 215 lb.

Felt shall be laid without wrinkles or buckles. It shall be rolled immediately behind the hot mop and firmly embedded by brooming the felt.

All nailing of roofing to roof surfaces shall be done with Simplex flat head roofing nails or with 7/8-in. galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—Insulated Roofs—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

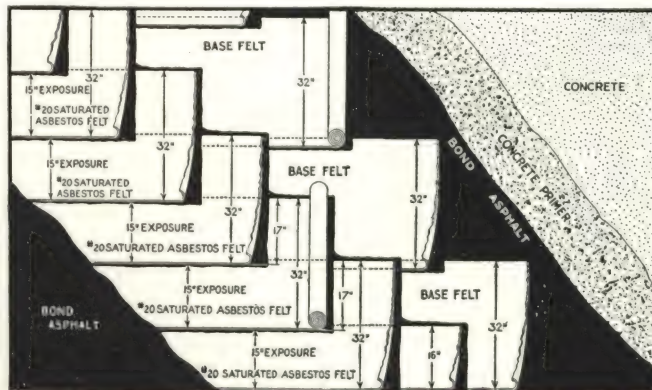
Note 2—Leader Heads, Vents, etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

Bond

The Manufacturer's Surety Bond Guaranty as issued by the National Surety Corp. of New York, N. Y., covering a period of twenty years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the Manufacturer.



COAL TAR PITCH AND TARRED FELT, GRAVEL OR SLAG FINISH ROOF

For Use Over Board Sheathing with or Without Approved Insulation and
Precast Gypsum Blocks

For Inclines Not Exceeding 2-in. per Ft.

SPECIFICATION NO. 202—20-YEAR BOND*

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Definitions

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

Work by Others

If over boards, the roof deck shall be constructed of seasoned lumber, smooth and securely nailed, and free from large cracks or knot holes. It shall be properly graded to outlets and swept clean and free from all loose material.

General Requirements Applying to the Contractor

The contractor must be approved by the manufacturer.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

Specifications for Laying Roofing

First—Lay one thickness of sheathing paper, weighing not less than 5 lb. per 100 sq. ft., lapping the sheets at least 1-in. If Precast Gypsum Block is used, sheathing paper may be omitted.

Second—Over the entire surface lay two plies of No. 15 Tarred Felt, lapping each sheet 17-in. over the preceding one and nailing as often as is necessary to secure, until the remaining felt is laid. These felts shall be turned up not less than 4-in. along all walls or vertical surfaces.

Third—Coat the entire surface uniformly with Coal Tar Pitch.

Fourth—Over the entire surface lay three plies of No. 15 Tarred Felt, lapping each sheet 22-in. over the preceding one, mopping with Coal Tar Pitch the full 22-in. on each sheet, so that in no place shall felt touch felt. The back edge of the sheet shall be nailed at intervals of 24-in. at a distance not greater than 6-in. from the back edge of the sheet. Such nailing as is necessary shall be done so that all nails are covered by not less than two plies of felt. These felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Fifth—Over the entire surface pour a uniform coating of Coal Tar Pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq. ft.

The gravel or slag shall be $\frac{1}{4}$ -in. to $\frac{5}{8}$ -in. in size, dry and free from dirt. If the roof is applied during cold weather, or slag or gravel is damp, it shall be heated and dried immediately before application.

Materials and Workmanship

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

One Layer Sheathing Paper.....	5 lb.
Five Plies Ruberoid No. 15 Tarred Felt.....	80 lb.
Ruberoid Coal Tar Pitch.....	150 lb.
Simplex Nails	2 lb.
Roofing Gravel	400 lb.
OR	
Roofing Slag	300 lb.

Total Approximate Weight { gravel surface.....637 lb.
slag surface.....537 lb.

The felt shall be laid without wrinkles or buckles, and the pitch shall not be heated to exceed 400° F.

All nailing of roofing shall be done with Simplex flat head roofing nails or with $\frac{1}{8}$ -inch galvanized roofing nails, driven through flat tin discs.

All roofing shall be done to the satisfaction and approval of the manufacturer.

General Notes

Note 1—Insulated Roofs—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

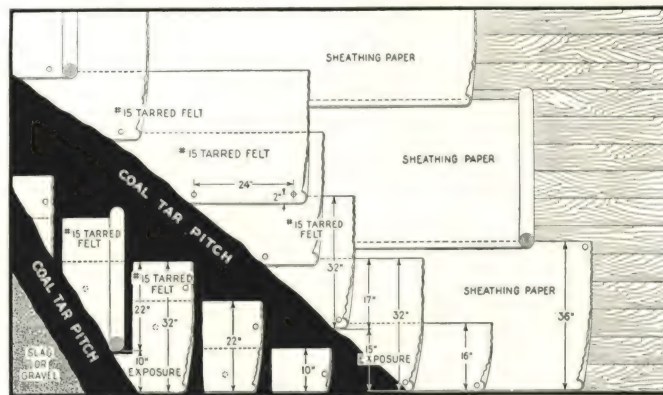
Note 2—Leader Heads, Vents, etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

Bond

The Manufacturer's Surety Bond Guaranty as issued by the National Surety Corp. of New York, N. Y., covering a period of twenty years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the Manufacturer.



*SPECIFICATION NO. 204—ASPHALT FELT AND ASPHALT WITH SLAG OR GRAVEL SURFACE

20-Year Bond—Underwriters' Class A Rating—For inclines not exceeding 3-in. per ft.

Construction Identical with No. 202, except that no sheathing paper is used.

For Inclines Not Exceeding 1-in. per Ft.

Underwriters' Laboratories Class A Rating

The roofing shall be a Ruberoid Bonded Roof carrying a 20-year guaranty bond, installed in accordance with conditions and specifications as hereinafter set forth.

Unless otherwise specifically stated in any case, the terms hereunder listed shall be construed in accordance with definitions as follows:

Manufacturer—The RUBEROID Co., whose main office is at No. 500 Fifth Avenue, New York, N. Y.

Contractor—The Roofing Contractor.

Tarred Felt—Ruberoid No. 15 Tarred Felt.

Coal Tar Pitch—Ruberoid Coal Tar Pitch.

The roof deck shall be thoroughly dry, smooth and free from loose material, and properly graded to outlets.

Where Book Tile is used the surface of the tile shall be covered with portland cement mortar 1-in. thick with a smooth and even finish.

The contractor shall inspect the roof surfaces and shall not proceed with roofing work until all defects, reasonably apparent by proper inspection and which might injure the roofing, have been remedied by others. The contractor assumes responsibility for existing under-surfaces as to their fitness to receive roofing when he proceeds with his work.

Roof surfaces shall be swept clean and free of all loose material before proceeding with roofing work.

The contractor shall afford all necessary facilities for inspections by the manufacturer.

First—Coat the roof deck uniformly with Coal Tar Pitch. If Precast Concrete Tile is used, the surface shall be spot or strip mopped.

Second—Over the entire surface lay four plies of No. 15 Tarred Felt, lapping each sheet 24½-in. over the preceding one and mopping with Coal Tar Pitch the full 24½-in. on each sheet so that in no place shall felt touch felt. These felts shall be cut off at the angle of the roof deck and walls or vertical surfaces.

Third—Over the entire surface pour a uniform coating of Coal Tar Pitch into which, while hot, embed not less than 400 lb. of gravel or 300 lb. of slag for each 100 sq. ft. The gravel or slag shall be from $\frac{1}{4}$ -in. to $\frac{5}{8}$ -in. in size, dry and free from dirt. If the roof is

applied during cold weather, or slag or gravel is damp, it shall be heated and dried immediately before application.

Not less than the following quantities of materials shall be used in constructing each 100 sq. ft. of roof area:

Four Plies Ruberoid No. 15 Tarred Felt..... 65 lb.

Four Piles Ruberoid No. 15 Tarred Felt.....	65 lb.
Ruberoid Coal Tar Pitch	200 lb.

Ruberoid Coal Tar Pitch.....	200 lb.
Roofing Gravel	400 lb.

Roofing Gravel 400 lb.
or

Roofing Slag 300 lb.

Total Approximate Weight..	{ gravel surface....665 lb.
	{ slag surface.....565 lb.

The felt shall be laid without wrinkles or buckles, and the pitch shall not be heated to exceed 400° F.

All roofing shall be done to the satisfaction and approval of the manufacturer.

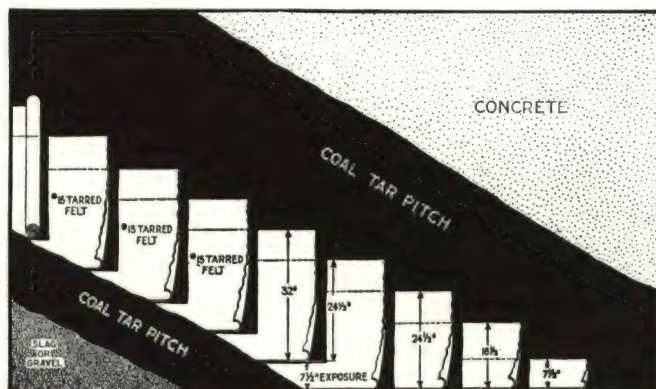
Note 1—Insulated Roofs—If this roof is applied over insulating material, the insulation must be firm, capable of withstanding traffic without crushing, and of a type that will retain nails. Provisions must be made that no more insulation shall be laid at one time than can be promptly protected by roofing in the event of sudden weather changes. A felt cut-off shall be mopped along the edge of insulation at a distance not greater than one width of the insulating material from parapet walls, curbs and other openings.

Note 2—Leader Heads, Vents, etc.—Leader heads, vents, and other openings shall be furnished with metal flanges of sufficient width to permit proper connections with the roofing. If not so furnished an exception of responsibility will be taken for any leaks which may develop immediately adjacent. Flanges of scuppers, gutters, gravel guards, finishing or edging strips, leader heads and vents shall be set on top of all felts, nailed and double felt stripped.

Note 3—Directions covering the application of felt flashing re-inforcement around all walls and vertical surfaces must be followed as outlined in the section entitled "Requirements for Applying Ruberoid Bonded Roofs," which is made a part of this application.

The Manufacturer's Surety Bond Guaranty as issued by the National Surety Corp. of New York, N. Y., covering a period of twenty years from date of completion of the work shall be furnished.

Note: This guarantee is not given on jobs of less than 50 squares, nor in such portions of the United States as are not covered by the Manufacturers' Inspection Service, except by special arrangement with the Manufacturer.



20-Year Bond—Underwriters' Class A Rating—For inclines not exceeding 3-in. per ft.

Construction Identical with No. 203, except that a concrete primer is used.

for

Genuine

RU-BER-OID

SHINGLES

ROOFINGS

AND

BUILDING

PRODUCTS

see

PAGES INDICATED IN MANUFACTURERS' INDEX



USG BUILT-UP ROOFING

U.S.

SPECIFICATION MANUAL

UNITED STATES GYPSUM COMPANY

United States Gypsum Co. Built-up Roofing Specifications

Specification Number		Guaranty Bond Term of Years	Underwriters' Classification	Limitation of Roof Deck Incline in Inches per Foot	TYPE OF ROOF DECK							TYPE OF MATERIAL						LOCATION	INDEX				
					Wood	Precast Gypsum	Poured Concrete	Poured Gypsum	Precast Concrete	Book Tile	Steel	Insulation	Number of Plies of Felt	Bitumen (Coal Tar Pitch or Asphalt)	Weight of Material Per 100 Square Feet						Surface Finish	Approved for Application in Sections of United States as Shown	Page Number
															15 lb. Felt	Base Sheet	Cap Sheet	Coal Tar Pitch	Asphalt	Primer			
A	1	20	A	0 to 2	•	•							5—15 lb.	Pitch	75			150			Gravel or Slag	All Sections	5
	B	20	A	0 to 2	•	•							5—15 lb.	Asphalt	75				125		Gravel or Slag	All Sections	6
A	2	20	A	0 to 2		•	•	•	•	•	•	•	4—15 lb.	Pitch	60			200			Gravel or Slag	All Sections	7
	B	20	A	0 to 2		•	•	•	•	•	•	•	4—15 lb.	Asphalt	60				150		Gravel or Slag	All Sections	8
A	3	10	A	0 to 2	•	•							4—15 lb.	Pitch	60			125			Gravel or Slag	All Sections	9
	B	10	A	0 to 2	•	•							4—15 lb.	Asphalt	60				100		Gravel or Slag	All Sections	10
A	4	10	A	0 to 2		•	•	•	•	•	•		3—15 lb.	Pitch	45			175			Gravel or Slag	All Sections	11
	B	10	A	0 to 2		•	•	•	•	•	•		3—15 lb.	Asphalt	45				125		Gravel or Slag	All Sections	12
5		20	C	2 to 6	•	•							1—60 lb. 3—15 lb.	Asphalt	45	60			100		Asphalt	Northern	13
6		20	C	2 to 6		•	•	•	•	•	•	•	3—15 lb. 2—34 lb.	Asphalt	45		68		125	10	Sanded	All Sections	15
7		10	C	2 to 6	•	•							1—45 lb. 2—15 lb.	Asphalt	30	45			75		Asphalt	Northern	17
8		10	C	2 to 6		•	•	•	•	•	•	•	2—15 lb. 2—34 lb.	Asphalt	30		68		100	10	Sanded	All Sections	19
9		20	C	1 to 6	•	•							3—15 lb. 1—85 lb.	Asphalt	45		85		75		Mineral	All Sections	21
10		20	C	1 to 6		•	•	•	•	•	•	•	3—15 lb. 1—85 lb.	Asphalt	45		85		105	10	Mineral	All Sections	23
11		10	C	1 to 6	•	•							2—15 lb. 1—85 lb.	Asphalt	30		85		50		Mineral	All Sections	25
12		10	C	1 to 6		•	•	•	•	•	•	•	2—15 lb. 1—85 lb.	Asphalt	30		85		80	10	Mineral	All Sections	27

USG WEATHERWOOD ROOF DECK INSULATION

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Specification No. 100—Over Wood Roof Decks Where High Humidities Are Not a Factor.....	Page 33
Specification No. 200—Over Wood Roof Decks Where High Humidities Are a Factor.....	Page 33
Specification No. 300—Over Gypsum and Concrete Decks.....	Page 34
Specification No. 400—Over Steel Roof Decks.....	Page 35
Prevention of Condensation.....	Pages 36, 37

USG BUILT-UP ROOF FLASHINGS

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Specification No. 20F —USG 20-Year Bonded Fabric Counter-Flashing.....	Page 40
Specification No. 10F —USG 10-Year Bonded Fabric Counter-Flashing.....	Page 41
Specification No. 20M —USG Metal Base and Cap-Flashing.....	Page 41
Specification No. 10FM—USG Felt Roofing Base and Metal Cap-Flashing.....	Page 41
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USG BUILT-UP ROOFING

THE POSITION OF THE UNITED STATES GYPSUM COMPANY IN THE BUILT-UP ROOFING INDUSTRY

The unique position of the United States Gypsum Company in the building industry makes particularly significant its position in the field of built-up roofing. **FIRST**, USG makes most of the principal types of roof decks—Poured Gypsum, Gypsum Tile, and Steel. **SECOND**, USG is a large manufacturer of thermal insulation. **THIRD**, USG operates its own factories for the manufacture of roofing products.

The result of these co-ordinated facilities is that the United States Gypsum Company can furnish materials for the complete installation of roof decks, roof deck insulation, and many types of roof coverings.

USG Built-up Roofing as described in the following pages is adaptable for use over all types of structures which are covered with built-up roofing.

Built-up Roof Bonds of two types are offered—a twenty-year bond and a ten-year bond. Inspection service is a part of each. Unbonded roofs, identical in all respects to the bonded roofs save for inspection and the Guaranty Bond, may be purchased with resultant economy.

The quality of USG Roofing Products parallels that of the long list of time-tested USG Building Products which have for more than 30 years received the approval of discriminating users.

SALES OFFICES

Atlanta, Ga....1440 Citizens and Southern Bank Bldg.
Boston, Mass.....Mystic Wharf, Charlestown (Plant)
Buffalo, N. Y.....514 Brisbane Building
Chicago, Ill.....300 West Adams St.
Cincinnati, Ohio.....506 Builders' Building
Cleveland, Ohio.....817 Hanna Building
Dallas, Tex.....1302 Santa Fe Building
Denver, Colo.....Continental Oil Building
Detroit, Mich.....River Rouge (Plant)
Indianapolis, Ind...Architects' and Builders' Building
Kansas City, Mo.....505-6-7 Fairfax Building
Los Angeles, Calif.

507 Architects Building, 5th Street at Figueroa
Milwaukee, Wis.....439 W. Oregon Street (Plant)
Minneapolis, Minn.....2510 Foshay Tower
New York City, N. Y.....30 Rockefeller Plaza
Omaha, Neb.....Woodmen of the World Building
Philadelphia, Pa.....58th and Schuylkill River (Plant)
Pittsburgh, Pa.....1205 Law and Finance Building
St. Louis, Mo.....808 Louderman Building
San Francisco, Calif.....2501 Harrison Street
Washington, D. C.

Investment Building, 15th and K Streets, N. W.

Sampson Plaster Board Company
Sales Agents for
United States Gypsum Company
Crosby Building,
Buffalo, New York

MILLS, MINES, AND WAREHOUSES

Alabaster, Mich.
Boston, Mass.
Bronx, New York City
Buffalo, N. Y.
Chicago, Ill.
Cleveland, Ohio
Cordova, Ill.
Detroit, Mich.
East Chicago, Ind.
Eldorado, Okla.
Falls Village, Conn.
Farnams, Mass.
Fort Dodge, Iowa
Genoa, Ohio
Grand Rapids, Mich.
Greenville, Miss.
Gypsum, Ohio
Harrison, N. J.
Heath, Mont.
Kansas City, Mo.
Lancaster, Ohio
Laramie, Wyo.
Lisbon Falls, Me.

Los Angeles, Calif.
Loveland, Colo.
Midland, Calif.
Milwaukee, Wis.
New Braunfels, Tex.
New Brighton, S. I., N. Y.
New York, N. Y.
North Kansas City, Mo.
North Tonawanda, N. Y.
Oakfield, N. Y.
Philadelphia, Pa.
Piedmont, S. D.
Plasterco, Va.
Quincy, Ill.
St. Joseph, Mo.
St. Paul, Minn.
San Francisco, Calif.
Skaneateles Falls, N. Y.
Southard, Okla.
South Bend, Ind.
South Gate (Los Angeles), Calif.
Sweetwater, Tex.
Warren, Ohio



ROOFING PLANTS
North Tonawanda, New York
South Bend, Indiana
St. Paul, Minnesota
South Gate (Los Angeles), Cal.

USG CORRELATIVE PROVISIONS

PREPARATION AND OTHER REQUIREMENTS OF ROOF DECKS TO RECEIVE USG STANDARD BUILT-UP ROOFING

NOTE—Construction of roof decks and provision for satisfactory surfaces to receive the roofing are not a part of the Roofing Contractor's work and are therefore not included in the individual USG Roofing Specifications. The following provisions, however, should be included as they apply under the proper headings of the specifications to be executed by others.

PARAPETS AND SIMILAR VERTICAL WALLS

Parapet and similar vertical walls surrounding the roof areas should be so constructed as to prevent infiltration of moisture to the interior of the walls above the line of roof flashing. For recommendations, see page 38.

ROOF DECK PROVISIONS

GENERAL

Drainage—Roof decks shall be accurately graded to drainage connections which shall be provided to assure the free flow of water from all points of the roof surface.

Gypsum fill to make drainage slopes above the roof deck is preferable to cinder aggregate fill which tends to expand excessively and crack.

The size and location of the drainage connections should depend upon the rate of rainfall in the locality of the roof. It is estimated that the maximum rate of rainfall in the United States varies from 4.5 to 8.5 inches per hour. For all practical purposes, provision for the handling of 6.5 inches of rainfall per hour may be used as a guide.

An accepted rule is to provide one square inch of leader (drain pipe) area for every 150 square feet of roof surface. Leaders should be spaced not more than 50 feet apart for pitched roofs and not more than 75 feet apart for flat roofs.

Lower roofs must be protected against abrasion and damage from water streams shed from open valleys or gutters of upper roofs by installing metal spreaders to distribute the flow of water.

Expansion Joints—Proper expansion joints shall be provided on large roof areas to eliminate excessive contraction and expansion.

WOOD DECKS

Decks shall be constructed of splined or matched tongue and groove well seasoned or treated lumber not less than 13/16 in. in thickness.

Purlin and rafter spacing shall be such as to prevent noticeable deflection under ordinary loads. Snow loads shall be provided for where needed.

Boards shall be dry, smooth, and free from wide cracks or large knot holes and shall be laid close together. They shall have solid bearings at ends (unless end matched) and shall be securely nailed to each bearing with not less than two face nails with heads driven flush with the surface of the boards.

All cracks wider than 1/4 inch and all knot holes larger than 1/4 inch in diameter shall be covered with tin or other suitable metal substantially nailed in place. End joints wider than 1/4 inch shall be likewise covered.

POURED GYPSUM OR CONCRETE DECKS

The poured gypsum (such as USG Sheetrock Pyrofill Roof Construction) or poured concrete roof deck surfaces shall be dry, smooth, firm, and thoroughly set, free from frost and projections above or depressions in the plane of the roof deck surface.

The roof deck shall be free from loose sand, scale resulting from frozen mix, and all loose material.

All irregularities in the surface of the deck shall be satisfactorily corrected by the removal of high spots and the filling in of low spots with gypsum or cement mortar properly bonded to the deck surface. All sharp arrises shall be rounded.

Unless the character of the concrete will permit nailing, provision shall be made for anchoring the roofing material at ridges, eaves, and gables by embedding treated wood nailing strips in the concrete level with the surface or attached to the structural steel.

On concrete decks, when the incline of the roof deck exceeds 3 inches in 12 inches, provision shall be made to enable the Roofing Contractor to securely anchor the roofing materials. Embed treated wood nailing strips in the roof deck parallel with the roof pitch not to exceed 4 feet apart on centers.

PRECAST GYPSUM OR CONCRETE SLAB DECKS

Tile (such as USG Pyrobar Precast Gypsum Tile) or precast concrete slabs shall be accurately laid upon the supporting steel work.

Bearings shall be even and full and the units laid tight. All joints on the deck surface shall be pointed full with gypsum mortar or plastic cement, struck smooth. All roof surfaces shall be smooth and true ready to receive the roofing materials.

On concrete decks, suitable nailing strips embedded in or securely fastened to the units or to the structural steel flush with the surface shall be provided at ridges, eaves, gables, and crests to provide secure fastening for roofing materials, gravel stops, flashings, and metal fascias.

On concrete decks when the incline of the roof deck exceeds 3 inches in 12 inches, provision shall be made to enable the Roofing Contractor to securely anchor the roofing materials. Embed treated wood nailing strips in the roof deck parallel with the roof pitch not to exceed 4 feet apart on centers.

BOOK TILE DECKS

Book tile and similar surfaces shall be covered with not less than a 1 inch thickness of Gypsum or Portland cement mortar finished smooth, firm, and properly bonded to the underlying tile.

CANT STRIPS

General—Cant strips shall be provided at all intersections of roof surfaces with vertical walls, parapets, and curbs. The cant shall be not less than 3½ inches in height and shall extend out not less than 3½ inches on the roof surface.

On Wood Decks—The cant strip may be constructed of beveled lumber not less than one (1) inch thick se-

Other requirements applying to poured gypsum or concrete decks shall apply in like manner here.

STEEL DECKS

Steel decks (such as USG Steel Roof Deck) shall be in accordance with the manufacturer's standard designs with allowable safe loads based on actual tests on bare plates.

The deck shall be free from perforations which will allow hot bitumen to drip through and shall be free from bolt heads or similar projections above the roof surface other than the attachment clips and accessories required to attach the deck to the purlins.

Decks and fittings, unless galvanized, must be painted with a shop coat of paint to assure a satisfactory bonding surface for the roofing materials. If surfaces are not properly painted at the time of erection, they shall be painted by the steel erection contractor to the Roofing Contractor's satisfaction prior to the application of the roofing materials.

At least one layer of ½ inch approved roof insulation (such as USG Weatherwood Roof Insulation) shall be applied to the steel deck before the application of the roofing materials will be permitted. Insulation shall be applied in strict accordance with Insulation Specifications, pages 30 to 35 inclusive. Proper devices for fastening the roof insulation shall be provided by the steel deck manufacturer where the roof deck incline exceeds 3 inches in 12 inches.

cured to 2 inch triangular blocks nailed to the roof deck approximately 16 inches on centers. A diagonal half 4 in. x 4 in. set in the angle and securely toe nailed at the lower edge is acceptable and recommended.

On Incombustible Decks—A gypsum mortar or concrete cant properly bonded to the roof deck shall be installed on gypsum or concrete decks.

USG Metal Cant Strip—A 20 gauge galvanized or painted metal cant strip made particularly for use with USG Steel Roof Decks may be used to advantage on all other types of decks. See details, page 45.

FLASHING RAGGLES

General—Unless otherwise specified, flashing raggles shall be provided in all vertical walls, parapets, and curbs. They shall be uniformly ½ inch wide by 1½ inch deep free from mortar or projections of any kind. They shall be set not less than five (5) inches nor more than eight and one-half (8½) inches above the top of the roof deck either parallel with the top of the cant strip or stepped to follow the roof incline or slope depending on the wall material. Where stepped, overlap at ends at least 3 inches.

Raggles and Nailing Strips in Concrete Walls—Pro-

vide a chamfered removable wood strip ½ inch wide by 1½ inches deep nailed to the forms parallel with the roof incline or slope.

At a point one (1) inch below the raggles provide a permanent, chamfered wood nailing strip 1 inch wide by 1½ inches deep, likewise nailed in the forms.

Raggles shall be removed with forms. Nailing strip shall remain in completed wall.

Raggles in Brick Walls—During construction lay in a removable chamfered wood strip ½ inch thick by 1½ inches deep, stepped to follow the roof inclines.

USG 20-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 1*

5-PLY GRAVEL OR SLAG SURFACED ROOFING OVER WOOD OR PRECAST GYPSUM TILE DECKS

- Approved for application throughout the United States on roof decks where the incline does not exceed two (2) inches in twelve (12) inches.
- These roofs are listed by the Underwriters' Laboratories as Class A.
- Preparation and other Requirements applying to Wood and Precast Gypsum Tile Decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Roof Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING TO SPECIFICATIONS 1-A and 1-B

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Twenty (20)-Year

Guaranty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 20-Year Guaranty Bond on all roofs of 5000 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be $\frac{7}{8}$ in. long for wood decks and $1\frac{3}{4}$ in. long for gypsum decks.

Temperature of USG Coal Tar Pitch or Asphalt shall never exceed 400° F. in heating kettle.

Surfacing material (Gravel or Slag) shall be dry, free from sand or dirt, and graduated in size from one-

quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in diameter. During cold weather Gravel or Slag shall be heated immediately preceding application to eliminate moisture.

Application of all felts shall start at low points and be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches.

All felts shall be 32 inches wide and shall be laid without wrinkles or buckles.

SPECIFICATION USG 1-A

(TAR SATURATED FELT and COAL TAR PITCH)

Five plies of USG Tar Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 150 lbs. of USG Coal Tar Pitch, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing 1-A.

FIRST—Cover the roof deck with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Lap paper two (2) inches and secure to deck by occasional nailing.

SECOND—Apply two (2) plies of USG Tar Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet seventeen (17) inches over the preceding sheet, and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Nail as required to hold the sheets in place until remaining felt is laid.

THIRD—Coat the entire surface of the felts thus laid with USG Coal Tar Pitch.

FOURTH—Apply three (3) plies of USG Tar Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet twenty-two (22) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. (When the incline of roof exceeds 1" in 12", each sheet shall be nailed every 18" not lower than 3" from the top edge of the sheet. All nails shall be covered with not less than two plies of felt.) A uniform coat of USG Coal Tar Pitch shall be

applied to the full twenty-two (22) inch lap so that at no point shall felt touch felt.

FIFTH—Cover the entire roof surface with a uniform, heavy coat of USG Coal Tar Pitch poured from a dipper or suitable pouring can, using not less than sixty (60) pounds of pitch to cover one hundred (100) square feet of roof surface. Into this flood coat, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.

SPECIFICATION USG 1-B (ASPHALT SATURATED FELT AND ASPHALT)

Five plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 125 lbs. of USG **Flat** Asphalt, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing 1-B.

FIRST—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

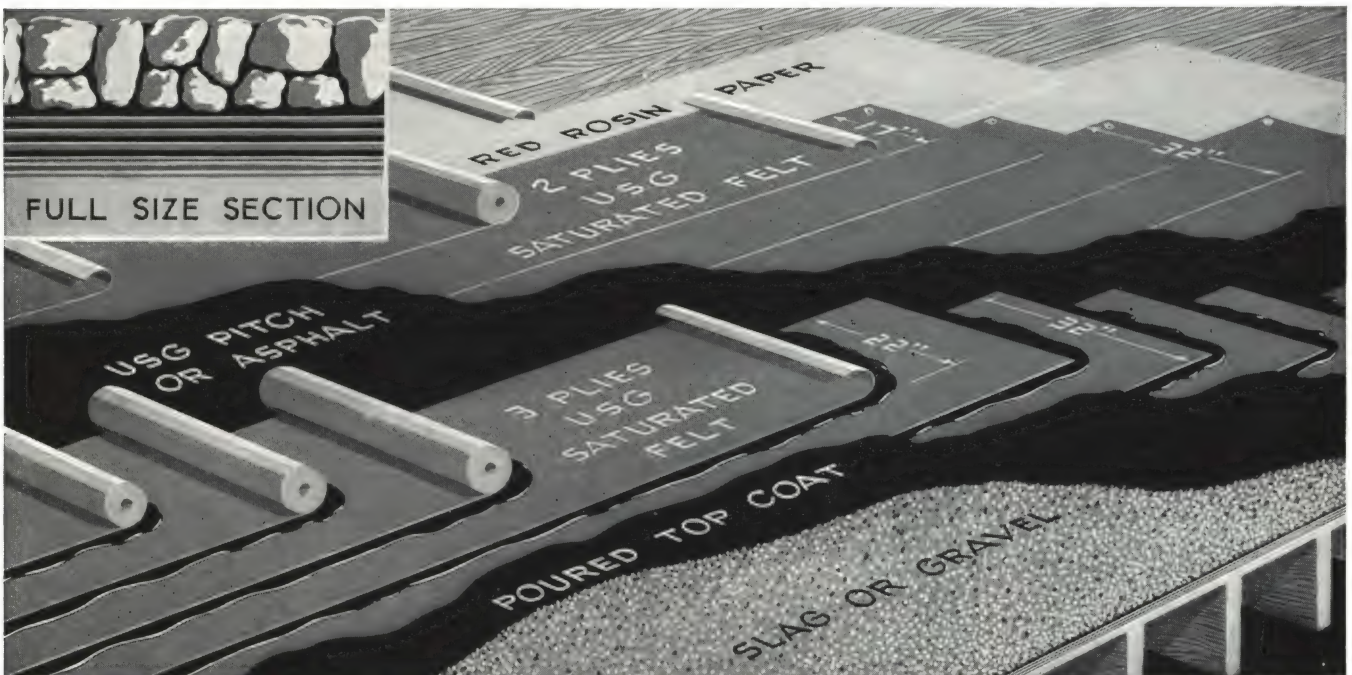
SECOND—Apply two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet seventeen (17) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Nail as required to hold sheets in place until remaining felt is laid.

THIRD—Mop the surface of the felts thus laid with USG Asphalt, into which, while hot, shall be embedded three (3) plies of USG Asphalt Saturated Rag Felt

weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet twenty-two (22) inches over preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (75 pounds total). (When the incline of roof exceeds 1" in 12", each sheet shall be nailed every 18" not lower than 3" from the top edge of the sheet. All nails shall be covered by not less than two plies of felt.)

FOURTH—Cover the entire roof surface with a uniform, heavy coat of USG Asphalt poured from a dipper or suitable pouring can, using not less than fifty (50) pounds of Asphalt to cover one hundred (100) square feet of roof surface. Into this top coating, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.

DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATIONS 1-A AND 1-B



USG 20-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 2*

4-PLY GRAVEL OR SLAG SURFACED ROOFING OVER POURED GYPSUM OR CONCRETE, PRECAST CONCRETE SLAB DECKS

- Approved for application throughout the United States on roof decks where the incline does not exceed 2 inches in 12 inches.
- Roofs are listed by Underwriters' Laboratories as Class A.
- Preparation and other Requirements applying to these particular types of decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATIONS 2-A and 2-B

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Twenty (20)-Year Guaranty Bond issued by the National Surety Corp.

Guaranty Bond issued by the National Surety Corp.

NOTE—The United States Gypsum Company will furnish its 20-Year Guaranty Bond on all roofs of 5000 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Temperature of USG Coal Tar Pitch or Asphalt shall never exceed 400° F. in heating kettle.

The surfacing material (Gravel or Slag) shall be dry, free from sand or dirt, and graduated in size from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in diameter. During cold weather Gravel or Slag shall be heated im-

mediately preceding application to eliminate moisture.

Application of all felts shall start at low points and be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches.

All felts shall be 32 inches wide and shall be laid without wrinkles or buckles.

SPECIFICATION USG 2-A (TAR SATURATED FELT and COAL TAR PITCH)

Four plies of USG Tar Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 200 lbs. of USG Coal Tar Pitch, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing 2-A.

FIRST—Coat the entire deck surface with USG Coal Tar Pitch.

NOTE—If Precast Concrete Slabs are used, strip mop each slab, staying back three (3) inches from all joints.

SECOND—Apply four (4) plies of USG Tar Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet

twenty-four and one-half ($24\frac{1}{2}$) inches over preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Apply a uniform coat of USG Coal Tar Pitch to the full twenty-four and one-half ($24\frac{1}{2}$) inch lap so that at no point shall felt touch felt.

THIRD—Cover the entire roof surface with a uniform, heavy coat of USG Coal Tar Pitch poured from a dipper or suitable pouring can, using not less than sixty (60) pounds of pitch to cover one hundred (100) square feet of roof surface. Into this flood coat, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.

SPECIFICATION USG 2-B
(ASPHALT SATURATED FELT AND ASPHALT)

Four plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 150 lbs. of USG **Flat** Asphalt, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Built-up Roofing No. 2-B.

FIRST—Mop the entire surface of the deck with USG Asphalt.

NOTE—If Precast Concrete Slabs are used, strip mop each slab, staying back three (3) inches from all joints.

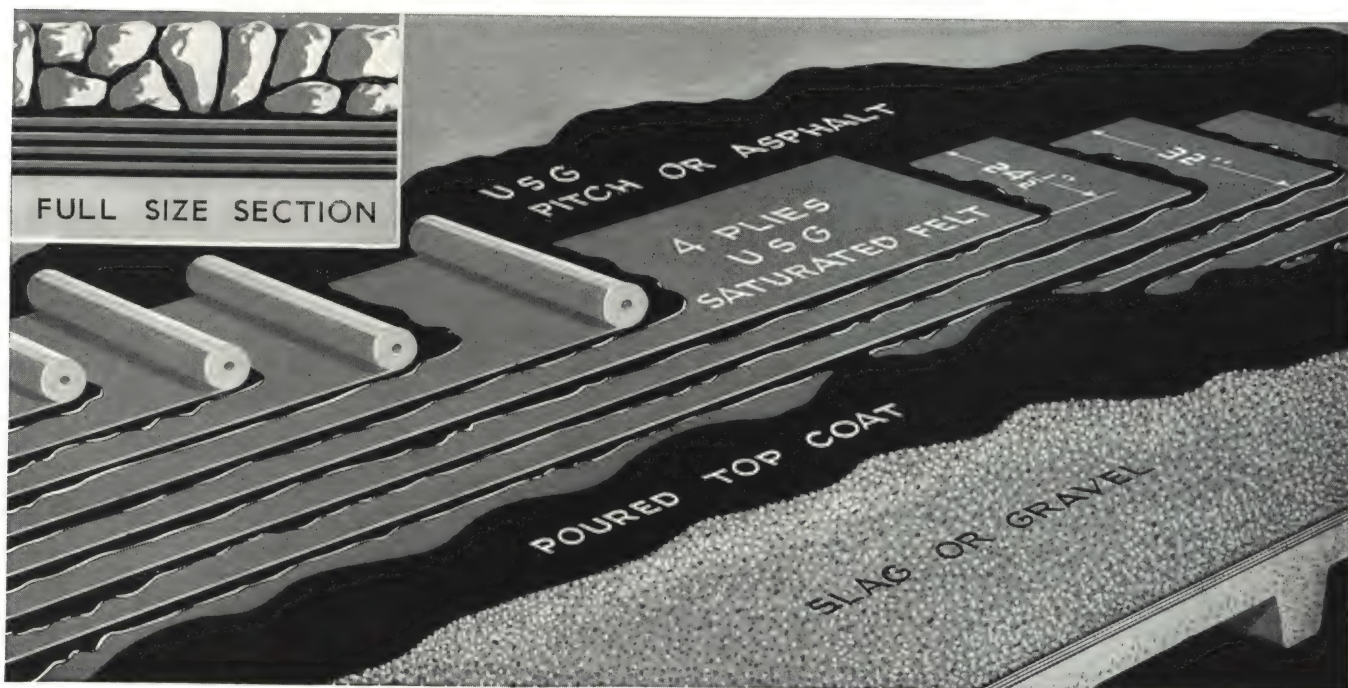
SECOND—Into this mopping, while hot, shall be embedded four (4) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet

twenty-four and one-half (24½) inches over preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (100 pounds total).

THIRD—Cover the entire roof surface with a uniform, heavy coat of USG Asphalt poured from a dipper or suitable pouring can, using not less than fifty (50) pounds of asphalt to cover one hundred (100) square feet of roof surface. Into this top coating, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.



DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATIONS 2-A AND 2-B



USG 10-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 3*

**4-PLY GRAVEL OR
SLAG SURFACED
ROOFING OVER
WOOD OR PRECAST
GYPSUM TILE DECKS**

- Approved for application throughout the United States on roof decks where the incline does not exceed two (2) inches in twelve (12) inches.
- These roofs are listed by the Underwriters' Laboratories as Class A.
- Preparation and other Requirements applying to Wood and Precast Gypsum Tile Decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Roof Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATIONS 3-A and 3-B

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Ten (10)-Year Guar-

anty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 10-Year Guaranty Bond on all roofs of 2500 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be $\frac{7}{8}$ in. long for wood decks and $1\frac{1}{4}$ in. long for gypsum decks.

Temperature of USG Coal Tar Pitch or Asphalt shall never exceed 400° F. in heating kettle.

Surfacing material (Gravel or Slag) shall be dry, free from sand or dirt, and graduated in size from one-

quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in diameter. During cold weather Gravel or Slag shall be heated immediately preceding application to eliminate moisture.

Application of all felts shall start at low points and be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches.

All felts shall be 32 inches wide and shall be laid without wrinkles or buckles.

SPECIFICATION USG 3-A (TAR SATURATED FELT and COAL TAR PITCH)

Four plies of USG Tar Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 125 lbs. of USG Coal Tar Pitch, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing 3-A.

FIRST—Cover the roof deck with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Lap paper two (2) inches and secure to deck by occasional nailing.

SECOND—Apply two (2) plies of USG Tar Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet seventeen (17) inches over the preceding sheet, and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Nail as required to hold the sheets in place until remaining felt is laid.

THIRD—Coat the entire surface of the felts thus laid with USG Coal Tar Pitch.

FOURTH—Apply two (2) plies of USG Tar Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet seventeen (17) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. (When the incline of roof exceeds 1" in 12", each sheet shall be nailed every 18" not lower than 3" from the top edge of the sheet. All nails shall be covered with one ply of felt.) A uniform coat of USG Coal Tar Pitch shall be applied to the full

seventeen (17) inch lap so that at no point shall felt touch felt.

FIFTH—Cover the entire roof surface with a uniform, heavy coat of USG Coal Tar Pitch poured from a dipper or suitable pouring can, using not less than sixty (60) pounds of pitch to cover one hundred (100) square feet of roof surface. Into this flood coat, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.

SPECIFICATION USG 3-B (ASPHALT SATURATED FELT AND ASPHALT)

Four plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 100 lbs. of USG Flat Asphalt, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing 3-B.

FIRST—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

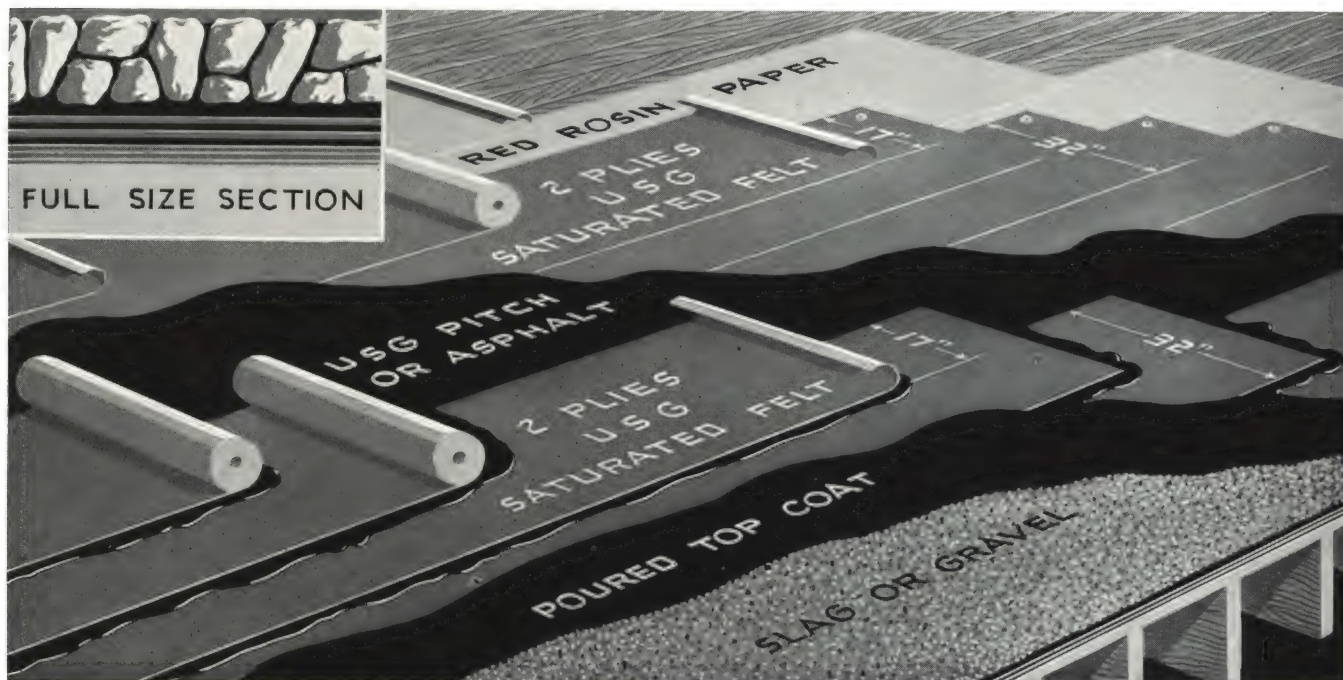
SECOND—Apply two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet seventeen (17) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Nail as required to hold sheets in place until remaining felt is laid.

THIRD—Mop the surface of the felts thus laid with USG Asphalt, into which, while hot, shall be embedded two (2) plies of USG Asphalt Saturated Rag Felt

weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet seventeen (17) inches over preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (50 pounds total). (When the incline of roof exceeds 1" in 12", each sheet shall be nailed every 18" not lower than 3" from the top edge of the sheet. All nails shall be covered with one ply of felt.)

FOURTH—Cover the entire roof surface with a uniform, heavy coat of USG Asphalt poured from a dipper or suitable pouring can, using not less than fifty (50) pounds of Asphalt to cover one hundred (100) square feet of roof surface. Into this top coating, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.

DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATIONS 3-A AND 3-B



USG 10-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 4*

3-PLY GRAVEL OR SLAG SURFACED ROOFING OVER POURED GYPSUM OR CONCRETE, PRECAST CONCRETE SLAB DECKS

- Approved for application throughout the United States on roof decks where the incline does not exceed 2 inches in 12 inches.
- Roofs are listed by Underwriters' Laboratories as Class A.
- Preparation and other Requirements applying to these particular types of decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATIONS 4-A and 4-B

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Ten (10)-Year Guar-

anty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 10-Year Guaranty Bond on all roofs of 2500 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Temperature of USG Coal Tar Pitch or Asphalt shall never exceed 400° F. in heating kettle.

The surfacing material (Gravel or Slag) shall be dry, free from sand or dirt, and graduated in size from one-quarter ($\frac{1}{4}$) inch to five-eighths ($\frac{5}{8}$) inch in diameter. During cold weather Gravel or Slag shall be heated im-

mediately preceding application to eliminate moisture.

Application of all felts shall start at low points and be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches.

All felts shall be 32 inches wide and shall be laid without wrinkles or buckles.

SPECIFICATION USG 4-A (TAR SATURATED FELT and COAL TAR PITCH)

Three plies of USG Tar Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 175 lbs. of USG Coal Tar Pitch, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing 4-A.

FIRST—Coat the entire deck surface with USG Coal Tar Pitch.

NOTE—If Precast Concrete Slabs are used, strip mop each slab, staying back three (3) inches from all joints.

SECOND—Apply three (3) plies of USG Tar Saturated Rag Felt weighing fifteen (15) pounds per one hundred

(100) square feet, single thickness, lapping each sheet twenty-two (22) inches over preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Apply a uniform coat of USG Coal Tar Pitch to the full twenty-two (22) inch lap so that at no point shall felt touch felt.

THIRD—Cover the entire roof surface with a uniform, heavy coat of USG Coal Tar Pitch poured from a dipper or suitable pouring can, using not less than sixty (60) pounds of pitch to cover one hundred (100) square feet of roof surface. Into this flood coat, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.

SPECIFICATION USG 4-B
(ASPHALT SATURATED FELT and ASPHALT)

Three plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and not less than 125 lbs. of USG **Flat** Asphalt, and 400 lbs. of Gravel or 300 lbs. of Slag shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing 4-B.

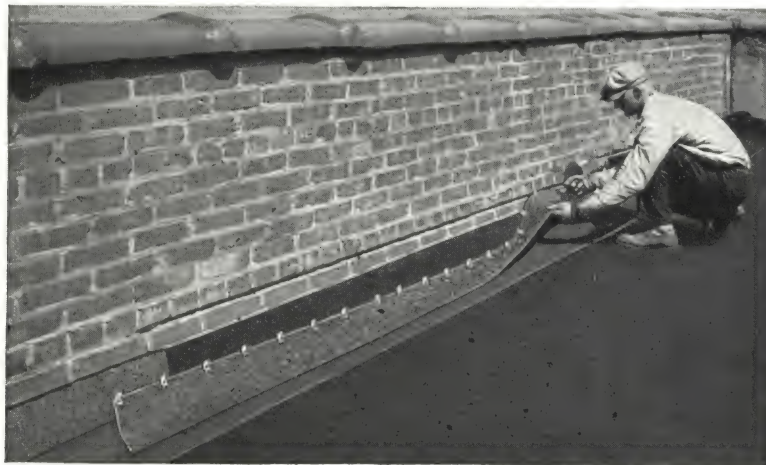
FIRST—Mop the entire surface of the deck with USG Asphalt.

NOTE—If Precast Concrete Slabs are used, strip mop each slab, staying back three (3) inches from all joints.

SECOND—Into this mopping, while hot, shall be embedded three (3) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet

twenty-two (22) inches over preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (75 pounds total).

THIRD—Cover the entire roof surface with a uniform, heavy coat of USG Asphalt poured from a dipper or suitable pouring can, using not less than fifty (50) pounds of asphalt to cover one hundred (100) square feet of roof surface. Into this top coating, while hot, a complete covering of Gravel or Slag shall be thoroughly and uniformly embedded.



DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATIONS 4-A AND 4-B



USG 20-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 5*

**ASPHALT SMOOTH
SURFACED ROOFING
• OVER •
WOOD OR PRECAST
GYPSUM TILE DECKS**

- Approved for application in northern section of the United States on roof decks where the incline or slope exceeds 2 inches in 12 inches.
- These roofs are listed by the Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to Wood and Precast Gypsum Tile Decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Roof Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 5

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Twenty (20)-Year

Guaranty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 20-Year Guaranty Bond on all roofs of 5000 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be $\frac{7}{8}$ in. long for wood decks and $1\frac{1}{4}$ in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 5 (ASPHALT SATURATED FELT and ASPHALT)

One ply of USG Asphalt Saturated Rag Felt Base Sheet weighing 60 lbs. per 100 sq. ft.; three plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft.; and not less than 100 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 5.

FIRST—Apply one (1) layer of USG Asphalt Saturated Rag Felt Base Sheet weighing sixty (60) pounds per one hundred (100) square feet, lapping each sheet two (2) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Secure the base sheet to the roof deck by nailing along the side laps of the sheets, spacing

the nails six (6) inches apart on centers. In addition, the base sheets shall be secured with two (2) staggered rows of nails spaced twelve (12) inches apart on centers located approximately twelve (12) inches from each edge of the sheet.

SECOND—Cover the entire surface of the base sheets thus laid with a uniform mopping of USG Asphalt, into which, while hot, shall be embedded three (3) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet twenty-five (25) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Roll

each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (75 pounds total). (When the incline of roof exceeds 3" in 12", each sheet shall be nailed every 18" not lower than 3" from the top edge. All nails shall be covered by not less than two plies of felt.)

NOTE—When the incline of the roof exceeds three (3) inches in twelve (12) inches, the 15-pound USG Asphalt Saturated Rag Felts may be laid parallel to the incline of the roof (at

right angles to the base sheets), and each sheet shall be securely nailed at the crest or ridge of the roof and, in addition, each shall be nailed with two parallel rows of nails spaced twenty-four (24) inches apart on centers. One row of nails shall be located not less than three (3) inches from the unexposed edge of the sheet and the second row of nails not less than twelve (12) inches from the unexposed edge.

THIRD—Cover the entire surface of the felts thus laid with a uniform mopping of USG Asphalt, using not more than twenty-five (25) pounds of asphalt to cover one hundred (100) square feet of roof surface.



DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 5



USG 20-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 6*

• SANDED SURFACE •
• ASPHALT ROOFING •
OVER POURED GYPSUM
OR CONCRETE, PRECAST
CONCRETE SLAB DECKS

- Approved for application throughout the United States on roof decks where the incline or slope exceeds 2 inches in 12 inches.
- Roofs are listed by Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to these particular types of decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 6

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Twenty (20)-Year

Guaranty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 20-Year Guaranty Bond on all roofs of 5000 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be 1¾ in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 6 (ASPHALT SATURATED FELT and ASPHALT)

One gallon of USG Asphalt Primer; three plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft.; two plies of USG Asphalt Saturated and Sanded Rag Felt Cap Sheet, each ply weighing 34 lbs. per 100 sq. ft.; and not less than 125 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 6.

FIRST—Coat the entire roof surface with USG Asphalt Primer, using not less than one (1) gallon of primer to cover one hundred (100) square feet of roof surface. Allow sufficient time to dry.

NOTE—If Precast Concrete Slabs are used, strip

prime each slab staying back three (3) inches from all joints.

SECOND—Mop the entire surface of the deck with USG Asphalt. Into this mopping, while hot, shall be embedded three (3) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet twenty five (25) inches over the preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used

per one hundred (100) square feet in the individual moppings under and between plies of felt (75 pounds total).

THIRD—Cover the entire surface of the felt thus laid with a uniform mopping of USG Asphalt, into which, while hot, shall be embedded, coated side up, two (2) plies of USG Asphalt Saturated and Sanded Rag Felt Cap Sheet weighing thirty-four (34) pounds per one hundred (100) square feet, single thickness, lapping each sheet nineteen (19) inches over the preceding sheet, cutting the felt off at the top of the cant strip or at all vertical surfaces. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of the cap sheet (50 pounds total).

When the character of the roof permits nailing (poured gypsum decks), each USG Sanded Cap Sheet shall be nailed with two parallel rows of nails spaced twelve (12) inches apart on centers. One row of nails shall be located not lower than three (3) inches from the top edge of the sheet and the second row of nails not lower than twelve (12) inches from the top edge of the sheet.



When the character of the roof surface will not permit nailing (poured concrete or precast concrete slab decks) and nailing strips are provided parallel with the incline of the roof spaced four (4) feet apart on centers, each USG Sanded Cap Sheet shall be nailed to each nailing strip in two parallel rows. One row of nails shall be located not lower than three (3) inches from the top edge of the sheet and the second row not lower than twelve (12) inches from the top edge.

NOTE—When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof will not permit nailing (poured concrete or precast concrete slab decks), the USG Sanded Cap Sheet may be applied in continuous lengths parallel with the incline of the roof (at right angles to the underlying felt) nailed securely at the crest or ridge.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the steep surfaces not less than twenty-four (24) inches before the application of the roofing on the steep surfaces. The steep surface roofing shall be carried, full thickness, over this entire lapped juncture and, in addition, at least six (6) inches out over the flat roof surface.

DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 6



USG 10-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 7*

**ASPHALT SMOOTH
SURFACED ROOFING
• OVER •
WOOD OR PRECAST
GYPSUM TILE DECKS**

- Approved for application in northern section of the United States on roof decks where the incline or slope exceeds 2 inches in 12 inches.
- These roofs are listed by the Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to Wood and Precast Gypsum Tile Decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Roof Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 7

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Ten (10)-Year Guaranty Bond issued by the National Surety Corp.

ant y Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 10-Year Guaranty Bond on all roofs of 2500 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be $\frac{7}{8}$ in. long for wood decks and $1\frac{1}{4}$ in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 7 (ASPHALT SATURATED FELT and ASPHALT)

One ply of USG Asphalt Saturated Rag Felt Base Sheet weighing 45 lbs. per 100 sq. ft.; two plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft.; and not less than 75 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 7.

FIRST—Apply one (1) layer of USG Asphalt Saturated Rag Felt Base Sheet weighing forty-five (45) pounds per one hundred (100) square feet, lapping each sheet two (2) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Secure the base sheet to the roof deck by nailing along the side laps of the sheets, spacing

the nails six (6) inches apart on centers. In addition, the base sheets shall be secured with two (2) staggered rows of nails spaced twelve (12) inches apart on centers located approximately twelve (12) inches from each edge of the sheet.

SECOND—Cover the entire surface of the base sheets thus laid with a uniform mopping of USG Asphalt, into which, while hot, shall be embedded two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet nineteen (19) inches over the preceding sheet and extending up to the top of the cant strip or on all vertical surfaces four (4) inches. Roll each

sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (50 pounds total). (When the incline of roof exceeds 3" in 12", each sheet shall be nailed every 18" not lower than 3" from the top edge. All nails shall be covered with one ply of felt.)

NOTE—When the incline of the roof exceeds three (3) inches in twelve (12) inches, the 15-pound USG Asphalt Saturated Rag Felts may be laid parallel to the incline of the roof (at

right angles to the base sheets), and each sheet shall be securely nailed at the crest or ridge of the roof and, in addition, each shall be nailed with two parallel rows of nails spaced twenty-four (24) inches apart on centers. One row of nails shall be located not less than three (3) inches from the unexposed edge of the sheet and the second row of nails not less than twelve (12) inches from the unexposed edge.

THIRD—Cover the entire surface of the felts thus laid with a uniform mopping of USG Asphalt, using not more than twenty-five (25) pounds of asphalt to cover one hundred (100) square feet of roof surface.



DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 7



USG 10-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 8*

• SANDED SURFACE •
• ASPHALT ROOFING •
OVER POURED GYPSUM
OR CONCRETE, PRECAST
CONCRETE SLAB DECKS

- Approved for application throughout the United States on roof decks where the incline or slope exceeds 2 inches in 12 inches.
- Roofs are listed by Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to these particular types of decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 8

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Ten (10)-Year Guaranty Bond issued by the National Surety Corp.

ant y Bond issued by the National Surety Corp.

. . .

NOTE—*The United States Gypsum Company will furnish its 10-Year Guaranty Bond on all roofs of 2500 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.*

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be 1 1/4 in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 8 (ASPHALT SATURATED FELT AND ASPHALT)

One gallon of USG Asphalt Primer; two plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft.; two plies of USG Asphalt Saturated and Sanded Rag Felt Cap Sheet, each ply weighing 34 lbs. per 100 sq. ft.; and not less than 100 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 8.

FIRST—Coat the entire roof surface with USG Asphalt Primer, using not less than one (1) gallon of primer to cover one hundred (100) square feet of roof surface. Allow sufficient time to dry.

NOTE—*If Precast Concrete Slabs are used,*

strip prime each slab staying back three (3) inches from all joints.

SECOND—Mop the entire surface of the deck with USG Asphalt. Into this mopping, while hot, shall be embedded two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet nineteen (19) inches over the preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used

per one hundred (100) square feet in the individual moppings under and between plies of felt (50 pounds total).

THIRD—Cover the entire surface of the felt thus laid with a uniform mopping of USG Asphalt, into which, while hot, shall be embedded, coated side up, two (2) plies of USG Asphalt Saturated and Sanded Rag Felt Cap Sheet weighing thirty-four (34) pounds per one hundred (100) square feet, single thickness, lapping each sheet nineteen (19) inches over the preceding sheet, cutting the felt off at the top of the cant strip or at all vertical surfaces. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of the cap sheet (50 pounds total).

When the character of the roof permits nailing (poured gypsum decks), each USG Sanded Cap Sheet shall be nailed with two parallel rows of nails spaced twelve (12) inches apart on centers. One row of nails shall be located not lower than three (3) inches from the top edge of the sheet and the second row of nails not lower than twelve (12) inches from the top edge of the sheet.



When the character of the roof surface will not permit nailing (poured concrete or precast concrete slab decks) and nailing strips are provided parallel with the incline of the roof spaced four (4) feet apart on centers, each USG Sanded Cap Sheet shall be nailed to each nailing strip in two parallel rows. One row of nails shall be located not lower than three (3) inches from the top edge of the sheet and the second row not lower than twelve (12) inches from the top edge.

NOTE—When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof will not permit nailing (poured concrete or precast concrete slab decks), the USG Sanded Cap Sheet may be applied in continuous lengths parallel with the incline of the roof (at right angles to the underlying felt) nailed securely at the crest or ridge.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the steep surfaces not less than twenty-four (24) inches before the application of the roofing on the steep surfaces. The steep surface roofing shall be carried, full thickness, over this entire lapped juncture and, in addition, at least six (6) inches out over the flat roof surface.

DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 8



USG 20-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 9*

SEL-VI-LAP MINERAL SURFACED ROOFING OVER WOOD OR PRECAST GYPSUM TILE DECKS

- Approved for application throughout the United States on roof decks where the incline or slope exceeds one (1) inch in twelve (12) inches.
- These roofs are listed by the Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to Wood and Precast Gypsum Tile Decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Roof Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 9

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Twenty (20)-Year Guaranty Bond issued by the National Surety Corp.

Guaranty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 20-Year Guaranty Bond on all roofs of 5000 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be $\frac{7}{8}$ in. long for wood decks and $1\frac{1}{4}$ in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 9 (MINERAL SURFACED CAP SHEET, ASPHALT SATURATED FELT and ASPHALT)

Three plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and one layer of USG Sel-vi-lap Mineral Surfaced Rag Felt Roofing weighing 85 lbs. per 100 sq. ft., and not less than 75 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 9.

NOTE—USG Sel-vi-lap Mineral Surfaced Cap Sheet Roofing shall be cut into sheets approximately 8 feet long. Cut the roll at right angles to the 4 inch longitudinal selvage to include one (1) 6-inch end selvage on each sheet. Stack the sheets flat in piles on the roof, mineral face down.

FIRST—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

SECOND—Apply three (3) plies of USG Asphalt Saturated Rag Felt, weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet twenty-five (25) inches over the preceding sheet and embedded in a mopping of hot USG Asphalt. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt the full width of the twenty-five (25) inch lap so that at no point shall felt touch felt.

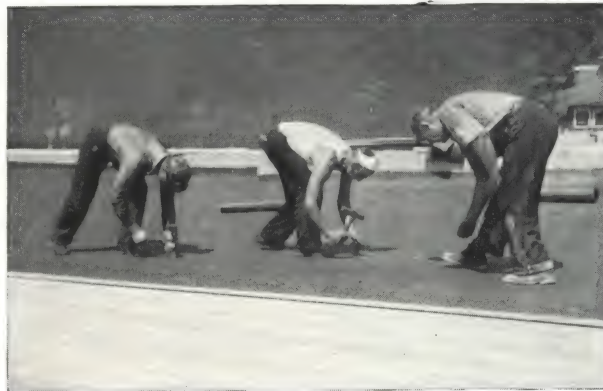
There shall be not less than twenty (20) pounds of asphalt used per one hundred (100) square feet in the individual moppings between plies of felt (40 pounds total). Felt shall be extended to the top of the cant strip or on all vertical surfaces four (4) inches. Each sheet shall be nailed every six (6) inches not lower than twelve (12) inches from the top edge. All nails shall be covered with not less than two plies of felt.

THIRD—Cover the entire surface of the felt thus laid with a uniform mopping of USG Asphalt, using not less than twenty-five (25) pounds of asphalt to cover one hundred (100) square feet of roof surface. Into this mopping, while hot, shall be embedded the USG Sel-vi-lap Mineral Surfaced Cap Sheet Roofing, applied in units approximately eight (8) feet long, preferably at right angles to the underlying felt. Break joints of transverse end laps of units in alternate courses. Seal the full width of the four (4) inch longitudinal side lap and the six (6) inch transverse end lap with a mop-

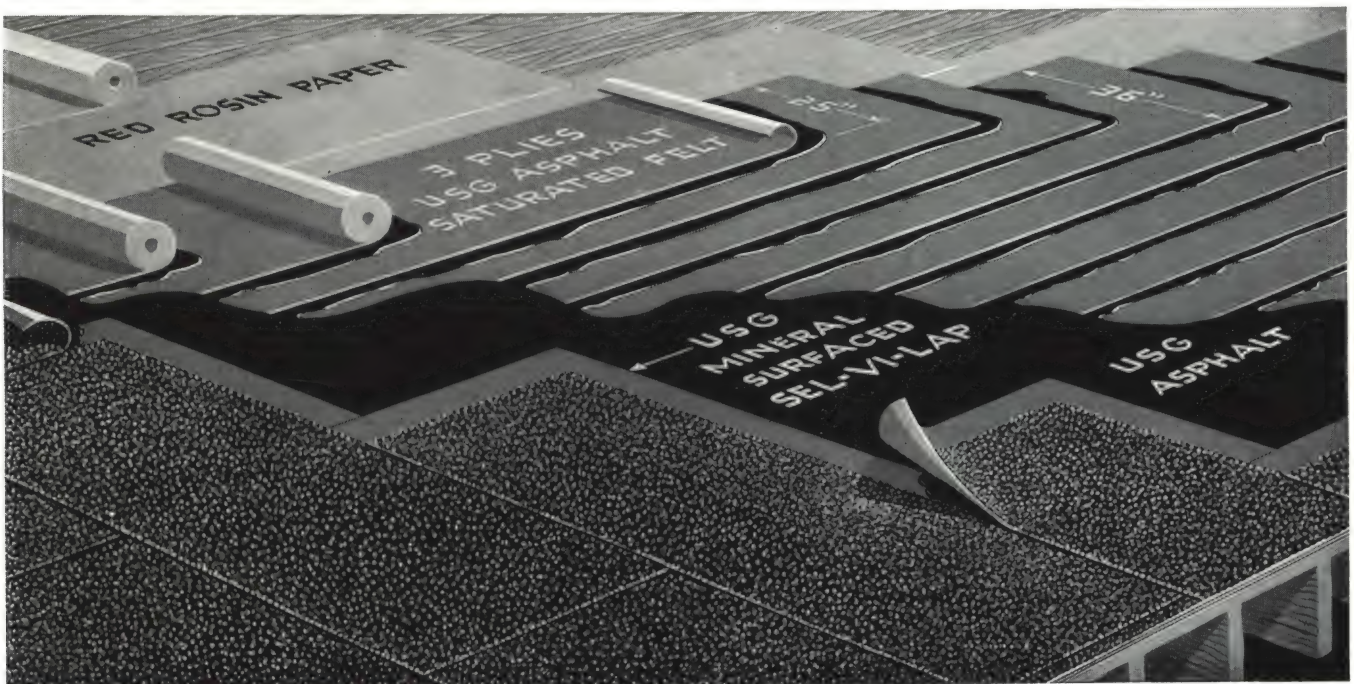
ping of USG Asphalt, into which, while hot, the exposed edges of the next overlapping cap sheet shall be carefully embedded and firmly pressed down to assure complete, positive adhesion between plies along the selvages. Care must be used when mopping the selvage laps to avoid dripping asphalt on the exposed mineral surface of the preceding sheet.

When the incline of the roof exceeds three (3) inches in twelve (12) inches, the Sel-vi-lap Cap Sheet shall be laid at right angles to the slope of the roof nailed every twelve (12) inches along the longitudinal selvage not more than two (2) inches from the edge of the sheet.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the steep surfaces not less than twenty-four (24) inches before the application of the roofing on the steep surfaces. The steep surface roofing shall be carried, full thickness, over this entire lapped juncture and, in addition, at least six (6) inches out over the flat roof surface.



DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 9



USG 20-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 10*

SEL-VI-LAP MINERAL SURFACED ROOFING OVER POURED GYPSUM OR CONCRETE, PRECAST CONCRETE SLAB DECKS

- Approved for application throughout the United States on roof decks where the incline or slope exceeds 1 inch in 12 inches.
- Roofs are listed by Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to these particular types of decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 10

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Twenty (20)-Year

Guaranty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 20-Year Guaranty Bond on all roofs of 5000 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be 1¾ in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide and laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 10 (MINERAL SURFACED CAP SHEET, ASPHALT SATURATED FELT and ASPHALT)

One gallon of USG Asphalt Primer; three plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft.; one layer of USG Sel-vi-lap Mineral Surfaced Rag Felt Roofing weighing 85 lbs. per 100 sq. ft.; and not less than 105 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 10.

NOTE—USG Sel-vi-lap Cap Sheet Roofing shall be cut into sheets approximately 8 feet long. Cut the roll at right angles to the 4-inch longitudinal selvage to include one (1) 6-inch end selvage on each sheet. Stack the sheets flat in piles on the roof, mineral face down.

FIRST—Coat the entire roof surface with USG Asphalt Primer, using not less than one (1) gallon of primer to cover one hundred (100) square feet of roof surface. Allow sufficient time to dry.

NOTE—If Precast Concrete Slabs are used, strip prime each slab staying back three (3) inches from all joints.

SECOND—Mop the entire surface of the deck with USG Asphalt. Into this mopping, while hot, shall be embedded three (3) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet

twenty-five (25) inches over the preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (75 pounds total).

THIRD—Cover the entire surface of the felt thus laid with a uniform mopping of USG Asphalt, using not less than twenty-five (25) pounds of asphalt to cover one hundred (100) square feet of roof surface. Into this mopping, while hot, shall be embedded the USG Sel-vi-lap Mineral Surfaced Cap Sheet Roofing, applied in units approximately eight (8) feet long, preferably at right angles to the underlying felt. Break joints of transverse end laps of units in alternate courses. Seal the full width of the four (4) inch longitudinal side lap and the six (6) inch transverse end lap with a mopping of USG Asphalt, into which, while hot, the exposed edges of the next overlapping cap sheet shall be carefully embedded and firmly pressed down to assure complete, positive adhesion between plies along the selvages. Care must be used when mopping the selvage laps to avoid dripping asphalt on the ex-

posed mineral surface of the previously laid sheet.

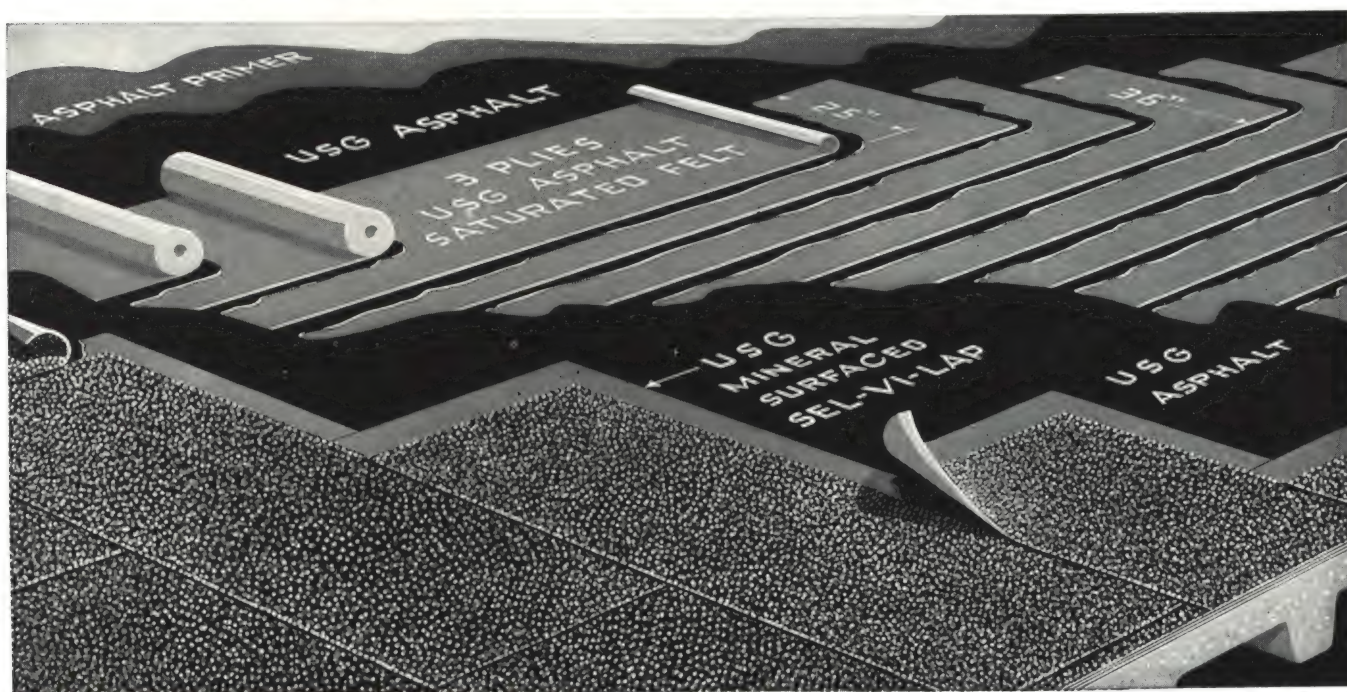
When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof permits nailing (poured gypsum decks), the USG Sel-vi-lap Mineral Surfaced Cap Sheet shall be laid at right angles to the slope of the roof (parallel with the underlying felt) and shall be nailed every twelve (12) inches along the longitudinal selvage not more than two (2) inches from the edge of the sheet.

When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof will not permit nailing (poured concrete or precast concrete slab decks), the Sel-vi-lap Cap Sheet will be furnished with the four (4) inch longitudinal selvage only (without transverse six (6) inch selvage end laps) and shall be applied in continuous lengths (not eight (8) foot units) parallel with the incline of the roof nailed securely at the crest or ridge.



Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the steep surfaces not less than twenty-four (24) inches before the application of the roofing on the steep surfaces. The steep surface roofing shall be carried, full thickness, over this entire lapped juncture and, in addition, at least six (6) inches out over the flat roof surface.

DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 10



USG 10-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 11*

SEL-VI-LAP MINERAL SURFACED ROOFING OVER WOOD OR PRECAST GYPSUM TILE DECKS

- Approved for application throughout the United States on roof decks where the incline or slope exceeds one (1) inch in twelve (12) inches.
- These roofs are listed by the Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to Wood and Precast Gypsum Tile Decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Roof Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied.

He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 11

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Ten (10)-Year Guar-

anty Bond issued by the National Surety Corp.

. . .

NOTE—The United States Gypsum Company will furnish its 10-Year Guaranty Bond on all roofs of 2500 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be 7/8 in. long for wood decks and 1 1/4 in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 11

(MINERAL SURFACED CAP SHEET, ASPHALT SATURATED FELT and ASPHALT)

Two plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft., and one layer of USG Sel-vi-lap Mineral Surfaced Rag Felt Roofing weighing 85 lbs. per 100 sq. ft., and not less than 50 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 11.

NOTE—USG Sel-vi-lap Mineral Surfaced Cap Sheet Roofing shall be cut into sheets approximately 8 feet long. Cut the roll at right angles to the 4 inch longitudinal selvage to include one (1) 6-inch end selvage on each sheet. Stack the sheets flat in piles on the roof, mineral face down.

FIRST—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

SECOND—Apply two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet nineteen (19) inches over the preceding sheet and embedded in a mopping of hot USG Asphalt. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt the full width of the nineteen (19) inch lap so that at no point shall felt touch felt.

There shall be not less than twenty (20) pounds of asphalt used per one hundred (100) square feet in the individual moppings between plies of felt (20 pounds total). Felt shall be extended to the top of the cant strip or on all vertical surfaces four (4) inches. Each sheet shall be nailed every six (6) inches not lower than three (3) inches from the top edge of the sheet. All nails shall be covered with one ply of felt.

THIRD—Cover the entire surface of the felt thus laid with a uniform mopping of USG Asphalt, using not less than twenty-five (25) pounds of asphalt to cover one hundred (100) square feet of roof surface. Into this mopping, while hot, shall be embedded the USG Sel-vi-lap Mineral Surfaced Cap Sheet Roofing, applied in units approximately eight (8) feet long, preferably at right angles to the underlying felt. Break joints of transverse end laps of units in alternate courses. Seal the full width of the four (4) inch longitudinal side lap and the six (6) inch transverse end lap with a mop-

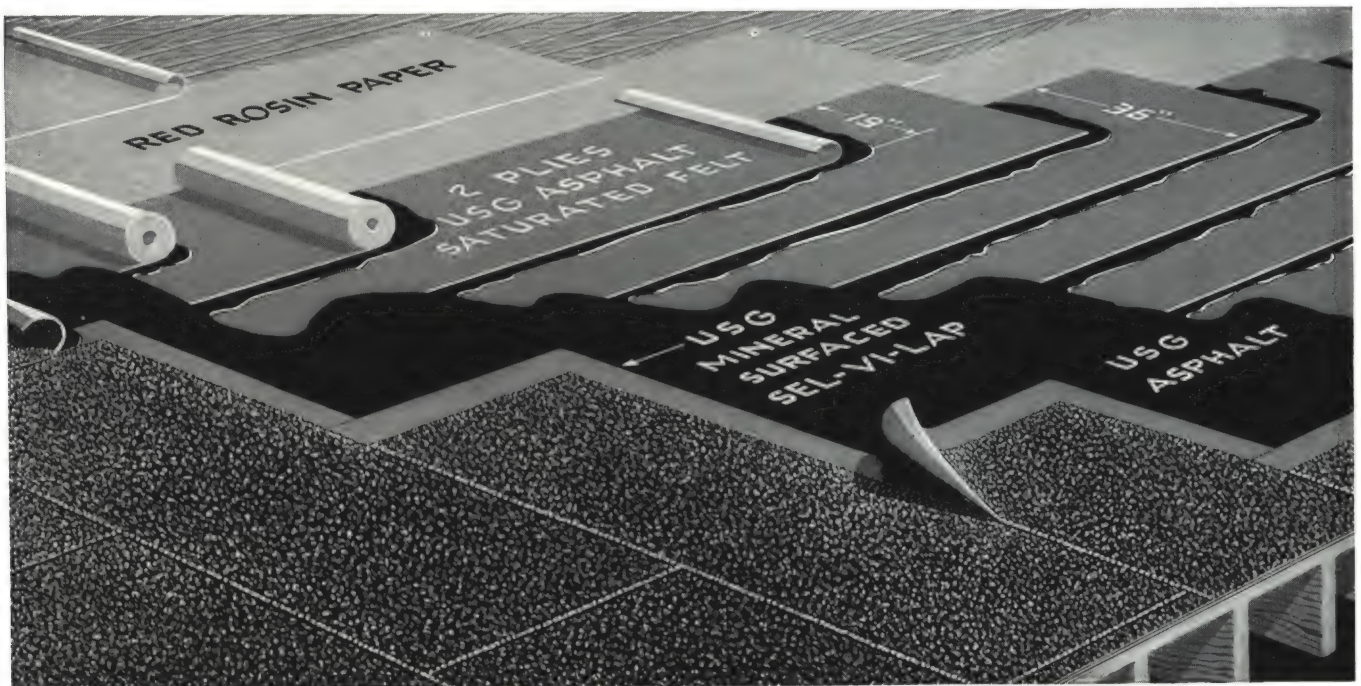
ping of USG Asphalt, into which, while hot, the exposed edges of the next overlapping cap sheet shall be carefully embedded and firmly pressed down to assure complete, positive adhesion between plies along the selvages. Care must be used when mopping the selvage laps to avoid dripping asphalt on the exposed mineral surface of the preceding sheet.

When the incline of the roof exceeds three (3) inches in twelve (12) inches, the Sel-vi-lap Cap Sheet shall be laid at right angles to the slope of the roof nailed every twelve (12) inches along the longitudinal selvage not more than two (2) inches from the edge of the sheet.

Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the steep surfaces not less than twenty-four (24) inches before the application of the roofing on the steep surfaces. The steep surface roofing shall be carried, full thickness, over this entire lapped juncture and, in addition, at least six (6) inches out over the flat roof surface.



DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 11



USG 10-YEAR BONDED BUILT-UP ROOF . . . *Specification No. 12*

SEL-VI-LAP MINERAL SURFACED ROOFING OVER POURED GYPSUM OR CONCRETE, PRECAST CONCRETE SLAB DECKS

- Approved for application throughout the United States on roof decks where the incline or slope exceeds 1 inch in 12 inches.
- Roofs are listed by Underwriters' Laboratories as Class C.
- Preparation and other Requirements applying to these particular types of decks shall be in accordance with "Correlative Provisions," page 3 which are a part of these detailed specifications.
- For USG Built-up Bonded Flashings, see pages 38 to 45 inclusive.

The Roofing Contractor shall examine all surfaces upon or against which roofing is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the roofing materials. He shall notify the Architect of any defects he considers detrimental to the installation of the roofing materials and shall make sure that all defects are corrected before he begins work. The application of roofing materials by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

GENERAL REQUIREMENTS APPLYING to SPECIFICATION NO. 12

BOND—The Roofing Contractor shall furnish a United States Gypsum Co. Ten (10)-Year Guaranty Bond issued by the National Surety Corp.

. . .

NOTE—*The United States Gypsum Company will furnish its 10-Year Guaranty Bond on all roofs of 2500 square feet or more in the United States where its inspection service is available. The roof must be applied by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Roof Specifications and subject to United States Gypsum Company inspection, acceptance, and approval.*

MATERIALS AND APPLICATION

Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to nail the roofing to the deck. Nails shall be 1¼ in. long for gypsum decks.

Application of all felts shall start at low points and

be laid at right angle to slope of roof. All end laps shall be not less than six (6) inches. All felts shall be 36 inches wide and shall be laid without wrinkles or buckles.

Temperature of USG Asphalt shall never exceed 400° F. in heating kettle.

SPECIFICATION USG NO. 12

(MINERAL SURFACED CAP SHEET, ASPHALT SATURATED FELT and ASPHALT)

One gallon of USG Asphalt Primer; two plies of USG Asphalt Saturated Rag Felt, each ply weighing 15 lbs. per 100 sq. ft.; one layer of USG Sel-vi-lap Mineral Surfaced Rag Felt Roofing weighing 85 lbs. per 100 sq. ft.; and not less than 80 lbs. of USG **Steep** Asphalt shall be used to construct 100 sq. ft. of USG Bonded Built-up Roofing No. 12.

NOTE—*USG Sel-vi-lap Cap Sheet Roofing shall be cut into sheets approximately 8 feet long. Cut the roll at right angles to the 4-inch longitudinal selvage to include one (1) 6-inch end selvage on each sheet. Stack the sheets flat in piles on the roof, mineral face down.*

FIRST—Coat the entire roof surface with USG Asphalt Primer, using not less than one (1) gallon of primer to cover one hundred (100) square feet of roof surface. Allow sufficient time to dry.

NOTE—*If Precast Concrete Slabs are used, strip prime each slab staying back three (3) inches from all joints.*

SECOND—Mop the entire surface of the deck with USG Asphalt. Into this mopping, while hot, shall be embedded two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet nine-

teen (19) inches over the preceding sheet, cutting the felt off at the top of the cant strip or on all vertical surfaces four (4) inches. Roll each sheet immediately behind the mop to assure a solid mopping of asphalt so that at no point shall felt touch felt. There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings under and between plies of felt (50 pounds total).

THIRD—Cover the entire surface of the felt thus laid with a uniform mopping of USG Asphalt, using not less than twenty-five (25) pounds of asphalt to cover one hundred (100) square feet of roof surface. Into this mopping, while hot, shall be embedded the USG Sel-vi-lap Mineral Surfaced Cap Sheet Roofing, applied in units approximately eight (8) feet long, preferably at right angles to the underlying felt. Break joints of transverse end laps of units in alternate courses. Seal the full width of the four (4) inch longitudinal side lap and the six (6) inch transverse end lap with a mopping of USG Asphalt, into which, while hot, the exposed edges of the next overlapping cap sheet shall be carefully embedded and firmly pressed down to assure complete, positive adhesion between plies along the selvages. Care must be used when mopping the selvage laps to avoid dripping asphalt on the ex-

posed mineral surface of the previously laid sheet.

When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof permits nailing (poured gypsum decks), the USG Sel-vi-lap Mineral Surfaced Cap Sheet shall be laid at right angles to the slope of the roof (parallel with the underlying felt) and shall be nailed every twelve (12) inches along the longitudinal selvage not more than two (2) inches from the edge of the sheet.

When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof will not permit nailing (poured concrete or precast concrete slab decks), the Sel-vi-lap Cap Sheet will be furnished with the four (4) inch longitudinal selvage only (without transverse six (6) inch selvage end laps) and shall be applied in continuous lengths (not eight (8) foot units) parallel with the incline of the roof nailed securely at the crest or ridge.



Where steep roofs join flat roofs, the roofing on the flat surfaces shall be carried up the steep surfaces not less than twenty-four (24) inches before the application of the roofing on the steep surfaces. The steep surface roofing shall be carried, full thickness, over this entire lapped juncture and, in addition, at least six (6) inches out over the flat roof surface.

DETAIL OF CONSTRUCTION FOR BUILT-UP ROOF SPECIFICATION NO. 12



USG WEATHERWOOD INSULATION UNDER BUILT-UP ROOFING

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INTRODUCTION

A GUIDE TO GOOD PRACTICE

GENERAL—Roof Insulation applied under Built-up Roofing is customarily furnished and applied by the Roofing Contractor. Often the application of the insulation followed immediately by the application of the finished built-up roofing must be executed against time and frequently under unfavorable weather conditions. Again, in the case of monolithic roof decks poured during the winter months, the evaporation of moisture from the slab is not completed before the insulation and roofing are installed.

To be permanently efficient, the insulation must be kept dry before, during, and, most important, after application. To this end the provisions which follow, if clearly set forth in the specifications, will enable the Roofing Contractor to do better and more rapid work and at the same time assure the owner a long lived, effectively insulated roof.

It should be borne in mind that the Guaranty Bond covering the Built-up Roofing and Roof Flashings does not apply to the roof insulation. Replacement of defective insulation, therefore, may involve the owner in costly repairs.

INSULATION REQUISITES FOR THE APPLICATION OF USG BONDED BUILT-UP ROOFING—USG Bonded Built-up Roofing will be applied over insulation fulfilling the following requirements:

The insulation shall be of the rigid board or pressure-resisting type (such as USG Weatherwood). Units shall be not larger than 22 inches wide by 47 inches long; of uniform thickness without curled, broken, or ragged corners; free from moisture, dust, and pitted or uneven surfaces; and of sufficient density to retain nails.

SEAL COURSES—The seal course is a continuous layer of waterproofing laid over the roof deck beneath the insulation. Together with the finished roof covering applied over the insulation, the seal course sandwiches the insulation between two water and vapor proof layers.

Where high industrial humidities are maintained, seal courses are imperative over wood decks to pre-

vent moisture absorption by the insulation. The same necessity may apply to monolithic and other combustible deck constructions under certain conditions.

Buildings with concrete and similar decks present several major problems to the roofer. He is often forced to lay the roofing, including the insulation, before other trades have left the roof in order that plastering and other operations within the building may be completed on scheduled time. Again, he may be called upon to work during inclement weather or during weather which prevents the complete drying out of the deck. Damage under these conditions may be done to both insulation and roofing. To provide against such contingencies, it is recommended that the specifications provide for the application of a standard seal course which acts as a temporary waterproof covering for the entire roof area.

WATER CUT-OFFS—Water cut-offs installed through the body of the insulation prevent the spread of water beyond predetermined segregated areas in the event of leaks due to damage to the roofing, flashings, defective parapet walls, or copings.

They also provide against damage by sudden showers and over-night and week-end interruptions during application of the insulation and roofing.

Their importance is such that it is suggested that the Architect indicate their desired locations with faint lines on the roof plan. This will assist the Roofing Contractor in planning his work so that he may schedule the completion of each area and will serve as a permanent record of their location.

RECOMMENDED NUMBER OF LAYERS OF INSULATION—While Weatherwood Roof Insulation is made in various thicknesses from ½ inch to 4 inches in multiples of ½ inch, for the best results the insulation should be laid in two or more layers, the second breaking joints with the first layer.

BITUMENS AND FELTS—Specify the same bitumens and felts throughout. Where coal tar pitch is used, all felts should be saturated with the same material. Where asphalt is used, use asphalt saturated felts.

USG WEATHERWOOD ROOF INSULATION •• DESCRIPTION

COMPOSITION—USG Weatherwood Roof Insulation is a felted fiber product treated to make it highly moisture resistant. It is formed on a single cylinder which produces a homogeneous board free from laminations and any tendency to split parallel with the faces.

NOTE—United States Gypsum Company has three Insulation Board manufacturing mills: St. Joseph, Missouri; Greenville, Mississippi; and Lisbon Falls, Maine. While the raw materials from which the St. Joseph Mill insulation is made are basically different from those of the Greenville and Lisbon Falls Mills, the physical characteristics of the products of all three mills are essentially the same.

LOW THERMAL CONDUCTIVITY—The average established in tests is .33 B.t.u.'s per hour, per inch thickness, per square foot, per degree F. difference in temperature between the two sides.

RESISTANCE TO MOISTURE—NON-ABSORPTION—Tests show that this board, after being submerged in water for a period of two (2) hours, has an average water absorption of less than fifteen (15) per cent by weight.

STRUCTURAL STRENGTH—The tensile strength of USG Weatherwood Insulation is over 300 pounds per square inch and the modulus of rupture, over 400 pounds.

NON-COMPRESSIBILITY—RESILIENCE—When laid over roof decks under standard roofing materials, it is sufficiently firm to prevent fracture of the roofing under normal use.

THICKNESS AND SIZE— $\frac{1}{2}$, 1, 1 $\frac{1}{2}$, 2, 2 $\frac{1}{2}$, 3, 3 $\frac{1}{2}$, and 4 inches thick. It is homogeneous in the $\frac{1}{2}$ inch thickness and can also be furnished 1 inch thick. On thicknesses greater than $\frac{1}{2}$ inch, the insulation will be furnished in multiple thicknesses of $\frac{1}{2}$ inch, waterproof glue or staple laminated. The area of the unit is 22 inches wide by 47 inches long.

Insulation Specifications

CORRELATIVE PROVISIONS APPLYING TO ROOF INSULATION

NOTE—The construction of roof decks and provision for satisfactory surfaces to receive the roof insulation and various miscellaneous provisions by other trades are not a part of the Roofing Contractor's work and are, therefore, not included in the Roof Insulation Specifications. The following provisions, however, should be included as they apply under the proper headings of the specifications to be executed by others.

ROOF DECK PROVISIONS—All provisions for the construction and finished condition of the various types of roof decks established under the heading "Correlative Provisions," pages 3 and 4, applying to "Built-up Roofing" shall apply likewise to "Roof Insulation."

Note particularly that steel decks must be insulated before the application of USG Bonded Built-up Roofing will be permitted.

WOOD NAILING STRIPS—The General Contractor will provide wood nailing strips to form a nailing base under all sheet metal flashing aprons and flanges of every nature. Strips shall be the full thickness of the insulation and at least 1 in. wider than the apron rigidly secured to the roof deck with nails, lag bolts, expansion bolts, or other means of attachment as best adapted to the particular construction.

CANT STRIPS—Allow for the full insulation thick-

ness above the roof deck surface where cant strips are required. Cant strips shall be provided as set forth on page 4. Cant strips on wood decks shall be set on top of the insulation secured by nailing through the insulation to deck proper. On incombustible decks where the cant is formed with gypsum mortar or concrete, provide a square shoulder the full insulation thickness at the toe of the cant above which the standard cant shall be formed.

FLASHING RAGGLES—In establishing the height of flashing raggles and nailing strips, add the thickness of the insulation to the heights required for un-insulated roofs as set forth on page 4.

ANCHORS AND GUYS—All anchors, guys, struts, and similar stays for the support or bracing of heavy ventilators, standpipes, louver enclosures, and similar equipment above the roof shall be rigidly secured to the roof deck proper and not to the insulation.

GENERAL REQUIREMENTS

APPLYING to APPLICATION of INSULATION

The Roofing Contractor shall examine all surfaces upon or against which the insulation is to be applied. He shall determine that the roof deck is properly prepared, slopes to drains are properly constructed, the roof deck is thoroughly dry, smooth, and free from projections above or depressions in the plane of the deck surface, the deck is free from rubbish and debris and ready to receive the insulation. He shall likewise

check all nailing strips installed to form a nailing base under sheet metal flashing aprons and flanges and shall notify the Architect of any defects he considers detrimental to the installation of the insulation and shall make sure that all defects are corrected before he begins work. The application of insulation by the Roofing Contractor will be considered acceptance by him of the roof deck as constructed.

MATERIALS AND APPLICATION

APPLYING to SPECIFICATIONS NOS. 100, 200, 300 and 400

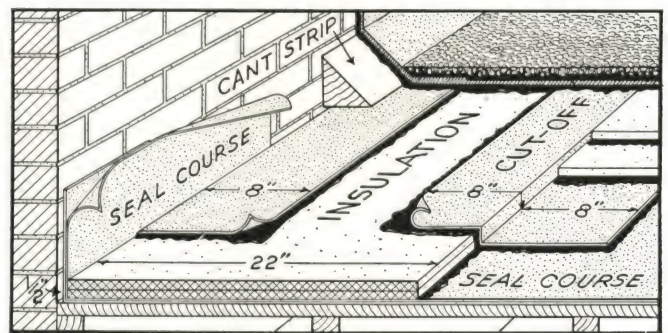
NOTE—Notes in bold face type are explanatory or advisory only and should not be included in the specification. Wherever words or phrases occur in the body of the specification paragraph printed in bold face type enclosed in parentheses, choose that word or phrase which applies to the particular work, omitting those that are irrelevant. Wherever the word "Specify" occurs in bold face type enclosed in parentheses, add the particular word or clause applicable.

WORK INCLUDED—

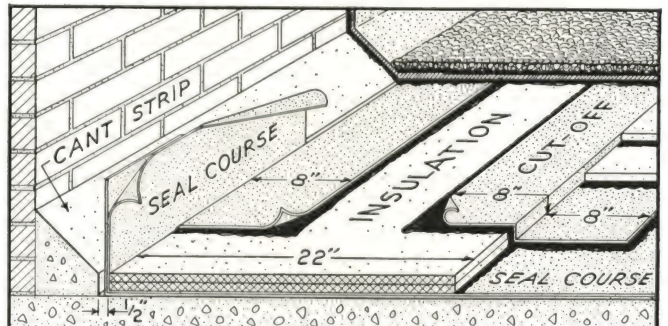
NOTE—List and locate the roof areas to be insulated. If more than one thickness of insulation is required on various roof areas, list and locate each separately.

INSULATION MATERIAL—Insulation shall be USG Weatherwood Roof Insulation as made by United States Gypsum Company, Chicago. Insulation shall be (specify) thick, laid in (one) (two) layer(s) (water-proof glue laminated) (staple laminated). Units shall be not larger than 22x47 inches in area. Insulation shall be kept dry before, during, and after application. Units shall be free from surface abrasions, curled or broken edges and corners.

NAILS—Nails shall be Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs. Nails for paper and felt shall be $\frac{7}{8}$ in. long for wood decks and $1\frac{3}{4}$ in. long for gypsum decks. Nails for insulation shall be of sufficient length to pass through the insulation and penetrate into but not through the deck construction.



DETAILS OF CANT STRIPS AND SEAL COURSES



APPLICATION OF INSULATION—Only as much insulation shall be laid over the roof area as can be covered by the finished roofing in any one day.

Lay the insulation in **(one) (two) layer(s)** over the entire roof area. Adjoining edges of the insulation units shall be brought to a moderate contact but shall not be forced into place. Where the insulation meets vertical surfaces, such as parapets, penthouses, and curbs, the insulation units shall be cut in a neat, workmanlike manner allowing at least $\frac{1}{2}$ in. clearance. Insulation units shall be laid with the length at right angles to the slope of the roof in parallel courses with end joints in each course breaking with those of adjoining courses.

Where insulation is laid in two (2) layers, the insulation units of the second layer shall be laid parallel with those of the first layer, and all joints of the second layer shall break with those of the first layer.

WATER CUT-OFFS—The insulation, whether laid in one (1) or two (2) layers, shall be cut to the line designated for the water cut-off.

Water cut-offs shall consist of strips of **(tar) (asphalt)** saturated roofing felt weighing 15 lbs. per 100 sq. ft. not less than 16 in. wide. One half ($\frac{1}{2}$) the width of the strip shall be thoroughly and firmly embedded in hot bitumen to the deck and the remaining one half ($\frac{1}{2}$) carried up and over the edge of the insulation and thoroughly and firmly embedded in hot bitumen to the top surface of the insulation.

Cut-offs shall be located approximately 22 in. from

and parallel with all vertical walls, such as parapets, penthouses, curbs, and around all leader heads, down spouts, soil pipes, vents, and ventilators. The body or field of the roof insulation shall be divided into rectangular areas approximately 30 ft. on a side, each area isolated with a water cut-off. Insert a water cut-off surrounding each day's work if the stop is not made at the designated water cut-off.

The first layer of the finished roofing shall be mopped to the water cut-off each night.

NOTE—Water cut-offs are customarily omitted where insulation is laid over a wood deck not first covered by a seal course as in Specification No. 100.

TEMPERATURE OF BITUMEN—Temperature of USG (Coal Tar Pitch) (Asphalt) shall never exceed 400° F. in the heating kettle.

APPLICATION OF USG BUILT-UP ROOFING OVER INSULATION

NOTE—Any USG Built-up Roofing designed for application over Poured Gypsum, Poured Concrete, or Precast Concrete Slab Decks may be applied over the insulation. Apply USG Built-up Roofing, Specifications Nos. 2A or 2B and Nos. 4A or 4B (pages 7 and 11 respectively) exactly as written. In the case of USG Built-up Roofing Specifications Nos. 6, 8, 10, and 12, omit the First Operation—the surface of the insulation requires no primer. See pages 15, 19, 23 and 27 respectively.

DETAILS OF WATER CUT-OFFS USED IN CONJUNCTION WITH INSULATION



Specification No. 100

WEATHERWOOD INSULATION OVER WOOD ROOF DECKS UNDER USG BUILT-UP ROOFING WHERE HIGH HUMIDITIES ARE NOT A FACTOR

BUILDING PAPER—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

NOTE—*Building paper may be omitted when insulation is laid in two (2) layers.*

APPLICATION OF INSULATION—Each insulation unit shall be secured in place by nailing. Space nails approximately twelve (12) inches apart on centers not less than one (1) inch from each edge (each corner of each unit must be securely nailed). In addition, nail along the longitudinal center line.

Nailing of two (2) layer insulation shall be through the second layer or top only. Do not nail first layer.

Specification No. 200

WEATHERWOOD INSULATION OVER WOOD ROOF DECKS UNDER USG BUILT-UP ROOFING WHERE HIGH HUMIDITIES ARE MAINTAINED

BUILDING PAPER—The roof deck shall be covered with a layer of Red Rosin Sized Sheathing Paper weighing not less than five (5) pounds per one hundred (100) square feet. Paper shall be lapped two (2) inches and secured to the deck by occasional nailing.

NOTE—*Building Paper must be used under the Seal Course where a Gravel or Slag Surfaced Built-up Roofing laid over the insulation requires a low melting point bitumen, such as for USG Built-up Roofing, Specifications Nos. 2A or 2B and Nos. 4A or 4B. Building Paper may be omitted where USG Built-up Roofing, Specifications Nos. 6, 8, 10, or 12 are laid over the insulation.*

SEAL COURSE—Apply two (2) plies of USG (Tar) (Asphalt) Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet over the preceding sheet seventeen (17) inches for thirty-two (32) inch felt or nineteen (19) inches for thirty-six (36) inch felt. Extend felt up on all vertical surfaces not less than eight (8) inches. Application of felts shall start at low points and be laid at right angles to the slope of the roof. All end laps shall be not less than six (6) inches. Felts shall be laid without wrinkles or buckles and shall be secured to the deck with occasional nailing. Apply a uniform coat of USG (Coal Tar Pitch) (Asphalt) to the full lap so that at no point shall felt touch felt.

After the insulation has been laid over the Seal Course, the turned up eight (8) inch extensions at all vertical surfaces shall be turned down over the ex-

posed surface of the insulation thoroughly and firmly embedded in a uniform coat of hot bitumen.

NOTE—*Where tar saturated felts are used, use coal tar pitch. Where asphalt saturated felts are used, use asphalt. Felts and bitumens or the Seal Course should match those selected for the built-up roofing to be applied over the insulation.*

APPLICATION OF INSULATION—Mop the entire surface of the Seal Course with a uniform coating of USG (Coal Tar Pitch) (Asphalt) into which, while hot, the insulation units shall be firmly and completely embedded.

When insulation is laid in two (2) layers, mop the entire surface of the first layer with a uniform coating of bitumen into which, while hot, the second layer shall be firmly and completely embedded.

Only sufficient area to provide embedment for a single insulation unit shall be mopped at a time.

There shall be not less than twenty-five (25) pounds of bitumen used per one hundred (100) square feet in the individual moppings.

Each insulation unit shall be secured in place by nailing. Space nails approximately twelve (12) inches apart on centers not less than one (1) inch from each edge (each corner of each unit must be securely nailed). In addition nail along the longitudinal center line.

Nailing of two (2) layer insulation shall be through the second or top layer only. Do not nail first layer.

Specification No. 300

WEATHERWOOD INSULATION OVER POURED GYPSUM or CONCRETE, PRECAST GYPSUM TILE, and PRECAST CONCRETE SLAB DECKS UNDER USG BUILT-UP ROOFING

PRIMER—Coat the entire roof surface with USG Asphalt Primer, using not less than one (1) gallon of primer to cover one hundred (100) square feet of roof surface. Allow sufficient time to dry.

NOTE—Omit primer if low melting point bitumens, either Coal Tar Pitch or Asphalt, are used as required for Gravel or Slag Surfaced Built-up Roofing laid over the insulation (USG Built-up Roofing, Specifications Nos. 2A or 2B and Nos. 4A or 4B). Felts and bitumens used in the Seal Course should match those used in the Built-up Roofing selected for application over the insulation.

NOTE—If asphalt saturated felt and high melting point asphalt are used over Precast Tile or Slabs in the Seal Course, strip prime each unit staying back (3) inches from all joints.

SEAL COURSE—Mop the entire surface of the deck with USG (Coal Tar Pitch) (Asphalt). Into this mopping, while hot, shall be embedded two (2) plies of USG (Tar) (Asphalt) Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet over the preceding sheet seventeen (17) inches for thirty-two (32) inch felt or nineteen (19) inches for thirty-six (36) inch felt. Extend felt up on all vertical surfaces not less than eight (8) inches. Application of felts shall start at low point and be laid at right angles to the slope of the roof. Lay felts without wrinkles or buckles. All end laps shall be not less than six (6) inches. As each ply of felt is laid, apply a uniform coat of USG (Coal Tar Pitch) (Asphalt) to the full lap so that at no point shall felt touch felt.

NOTE—If low melting point bitumens are used over Precast Tile or Slabs, strip mop each unit staying back three (3) inches from all joints. (USG Built-up Roofing, Specifications Nos. 2A or 2B and Nos. 4A or 4B). Felts and bitumens or the Seal Course should match those selected for the built-up roofing to be applied over the insulation.

After the insulation has been laid over the Seal Course, the turned up eight

(8) inch extensions at all vertical surfaces shall be turned down over the exposed surface of the insulation, thoroughly and firmly embedded in a uniform coat of hot bitumen.

APPLICATION OF INSULATION—Mop the entire surface of the (Seal Course) (deck) with a uniform coating of USG (Coal Tar Pitch) (Asphalt) into which, while hot, the insulation units shall be firmly and completely embedded.

When insulation is laid in two (2) layers, mop the entire surface of the first layer with a uniform coating of bitumen into which, while hot, the second layer shall be firmly and completely embedded.

Only sufficient area to provide embedment for a single insulation unit shall be mopped at a time.

There shall be not less than twenty-five (25) pounds of bitumen used per one hundred (100) square feet in the individual moppings.

When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof permits nailing (poured gypsum or precast gypsum tile), each insulation unit shall be secured in place by nailing. Space nails approximately twelve (12) inches apart on centers not less than one (1) inch from each edge (each corner of each unit must be securely nailed). In addition, nail along the longitudinal center line. Nailing of two layer insulation shall be through the second or top layer only. Do not nail first layer.

When the incline of the roof exceeds three (3) inches in twelve (12) inches and the character of the roof surface will not permit nailing (poured concrete or precast concrete slab decks) and nailing strips are provided parallel with the incline of the roof spaced four (4) feet apart on centers, insulation units shall be secured to each nailing strip with nails spaced approximately twelve (12) inches apart on centers. Nailing of two (2) layer insulation shall be through the second or top layer only. Do not not nail first layer of insulation.



Specification No. 400

WEATHERWOOD INSULATION OVER STEEL ROOF DECKS UNDER USG BUILT-UP ROOFING

NOTE—Steel decks must be insulated before the application of USG Bonded Built-up Roofing will be permitted.

NOTE—Use only steep asphalt and asphalt saturated felts in constructing seal courses, applying insulation, and constructing built-up roofing over steel decks.

NOTE—Always include a Seal Course if high humidity is present beneath the steel roof deck.

SEAL COURSE—Mop the entire surface of the deck with USG Asphalt. Into this mopping, while hot, shall be embedded two (2) plies of USG Asphalt Saturated Rag Felt weighing fifteen (15) pounds per one hundred (100) square feet, single thickness, lapping each sheet over the preceding sheet seventeen (17) inches for thirty-two (32) inch felt or nineteen (19) inches for thirty-six (36) inch felt. Extend felt up on all vertical surfaces not less than eight (8) inches. Application of felts shall start at low point and be laid at right angles to the slope of the roof. All end laps shall be not less than six (6) inches. Felts shall be laid without wrinkles or buckles. Apply a uniform coat of USG Asphalt to the full lap so that at no point shall felt touch felt.

After the insulation has been laid over the Seal Course, the turned up eight (8) inch extensions at all vertical surfaces shall be turned down over the exposed surface of the insulation, thoroughly and firmly embedded in a uniform coat of asphalt.

APPLICATION OF INSULATION—Mop the entire surface of the (Seal Course) (deck) with a uniform coating of USG Asphalt into which, while hot, the insulation units shall be firmly and completely embedded.

Where insulation is laid in two (2) layers, mop the entire surface of the first layer with a uniform coating of asphalt into which, while hot, the second layer shall be firmly and completely embedded.

Only sufficient area to provide embedment for a single insulation unit shall be mopped at a time.

There shall be not less than twenty-five (25) pounds of asphalt used per one hundred (100) square feet in the individual moppings.

When the incline of the roof exceeds three (3) inches in twelve (12) inches, the insulation shall be substantially secured to the steel deck with proper devices provided by the steel deck manufacturer.



PREVENTION OF CONDENSATION UNDER ROOFS

Determining the Thickness of Insulation

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The approximate thickness of insulation required to prevent condensation on the interior roof surface of a building can be determined on the chart below used in conjunction with the Coefficients of Transmission of Various Types of Flat Roofs Covered with Built-up Roofing given in the table on page 37.

The following example will serve to illustrate:

Construction of uninsulated roof is—1 in. yellow pine roof boarding covered with built-up roofing.

Dry-bulb temperature near ceiling.....85 deg. Fahr.
Relative humidity70 per cent.
Lowest outside temperature.....—10 deg. Fahr.
Coefficient of transmission roof.....0.485
Conductivity of insulation to be used.....0.30

The solution of this problem is indicated on the chart by the dotted line:

(1) Locate the inside dry-bulb temperature of 85 deg. on scale A, and draw a line vertically downward to the 70 per cent relative humidity curve indicated on scale B of the chart.

(2) Draw line 2 horizontally from the intersection located as per paragraph 1.

(3) Locate on scale D the temperature difference of 95 deg. between the ceiling temperature of 85 deg. and the lowest outside temperature of —10 deg., and draw a line vertically downward until it intersects with line 2.

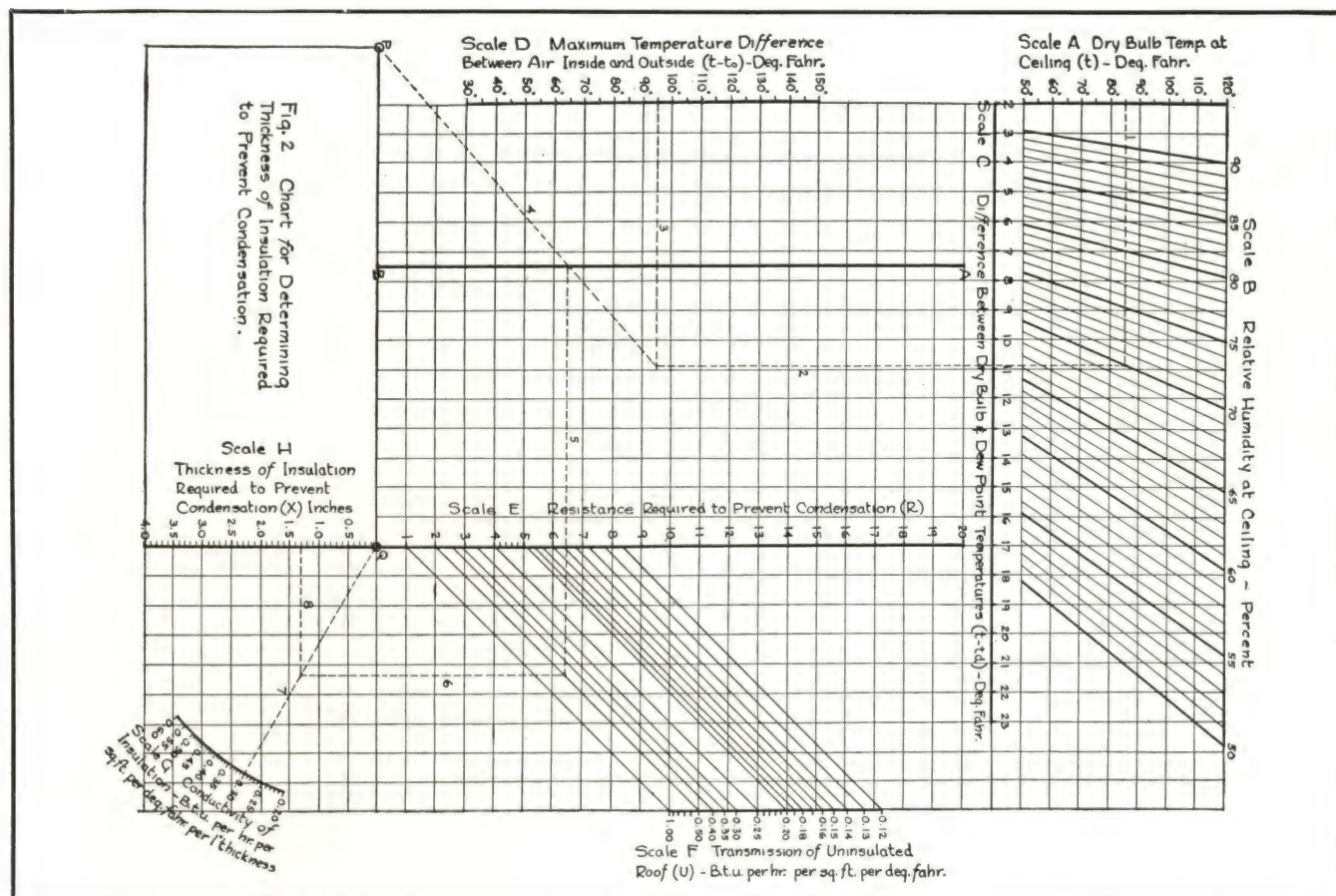
(4) From the point of intersection of lines 2 and 3, draw a line to the point P.

(5) From the intersection of lines 4 and AB, draw a line vertically downward until it intersects with the diagonal line corresponding to a coefficient of transmission of the roof of 0.485, located on scale F.

(6) From the intersection found as per paragraph 5, draw line 6 horizontally to the left.

(7) Locate the conductivity of 0.30 B.t.u. per hour, per square foot per degree Fahrenheit of the insulation on scale G and draw a line to point Q.

(8) From the intersection of lines 6 and 7, draw line vertically upward to scale H, on which the thickness of insulation of this conductivity is indicated, which is 1.3 in. The nearest commercial thickness above 1.3 in. would, of course, be selected.



COEFFICIENTS OF TRANSMISSION (U) OF VARIOUS TYPES OF FLAT ROOFS COVERED WITH BUILT-UP ROOFING

Coefficients are expressed in Btu. per hour per square foot per degree Fahrenheit difference in temperature between air on the two sides, and are based on an outside wind velocity of 15 mph.

NO.	TYPE OF ROOF DECK	THICKNESS OF ROOF DECK (INCHES)	WITHOUT CEILINGS—UNDERSIDE OF ROOF EXPOSED					WITH METAL LATH AND PLASTER CEILINGS ^d				
			A	B	C	D	E	F	G	H	I	J
			COLUMN A. NO INSULATION. COLUMN B. RIGID INSULATION (½ IN.) COLUMN C. RIGID INSULATION (1 IN.) COLUMN D. RIGID INSULATION (1½ IN.) COLUMN E. RIGID INSULATION (2 IN.)					COLUMN F. NO INSULATION. COLUMN G. RIGID INSULATION (½ IN.) COLUMN H. RIGID INSULATION (1 IN.) COLUMN I. RIGID INSULATION (1½ IN.) COLUMN J. RIGID INSULATION (2 IN.)				
1	PRECAST CEMENT SLAB	1½	0.85	0.37	0.24	0.18	0.14	0.43	0.26	0.19	0.15	0.12
2	CONCRETE CONCRETE	2	0.82	0.37	0.24	0.17	0.14	0.42	0.26	0.19	0.15	0.12
3		4	0.72	0.34	0.23	0.17	0.13	0.40	0.25	0.18	0.14	0.12
4		6	0.64	0.33	0.22	0.16	0.13	0.37	0.24	0.18	0.14	0.11
5	WOOD	1 ^(a)	0.49	0.28	0.20	0.15	0.12	0.32	0.21	0.16	0.13	0.11
6		1½ ^(a)	0.37	0.24	0.18	0.14	0.11	0.26	0.19	0.15	0.12	0.10
7		2 ^(a)	0.32	0.22	0.16	0.13	0.11	0.24	0.17	0.14	0.11	0.097
8		4 ^(a)	0.23	0.17	0.14	0.11	0.096	0.18	0.14	0.12	0.10	0.087
9	GYPSUM FIBER CONCRETE ^b (2 IN.) ON PLASTER BOARD (¾ IN.)	2¾	0.40	0.25	0.18	0.14	0.12	0.27	0.19	0.15	0.12	0.10
10		3¾	0.32	0.22	0.16	0.13	0.11	0.12	0.17	0.14	0.11	0.097
11	FLAT METAL ROOFS ^e		0.95	0.39	0.25	0.18	0.14	0.46	0.27	0.19	0.15	0.12
12	GYPSUM FIBER CONCRETE ^e (2 IN.) ON WEATHERWOOD INSULATION BOARD (1½ IN.)		0.26	0.19	0.15	0.12	0.10	0.20	0.16	0.13	0.11	0.09
13	GYPSUM FIBER CONCRETE ^e (2 IN.) ON WEATHERWOOD INSULATION BOARD (1 IN.)	3	0.19	0.15	0.12	0.10	0.088	0.16	0.13	0.11	0.09	0.08

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(^a) Nominal thickness specified—actual thicknesses used in calculations. (^b) Gypsum fiber concrete—87½ per cent gypsum, 12½ per cent wood fiber.

(^c) Coefficient of transmission of bare corrugated iron (no roofing) is 1.50 Btu per hour per square foot of projected area per degree Fahrenheit difference in temperature, based on an outside wind velocity of 15 mph.

(^d) These coefficients may be used with sufficient accuracy for wood lath and plaster, or plaster board and plaster ceilings. It is assumed that there is an air space between the under side of the roof deck and the upper side of the ceiling.

(^e) Numbers 12 and 13 were calculated by U. S. Gypsum Co. according to A. S. H. V. E. method but are not a part of the table from the A. S. H. V. E. Guide.

USG 20 and 10-YEAR BONDED . . . BUILT-UP ROOF FLASHINGS

USG Built-up Roof Flashings are approved for application throughout the United States when installed in connection with USG Bonded Built-up Roofs.

. . .

INTRODUCTION

ESSENTIALS OF WATER-TIGHT WALLS ABOVE THE ROOF

PARAPET WALLS—Parapet walls to which built-up roof flashings are attached are one of the most vulnerable parts of a building. The walls are exposed to rain at the top and on both sides, and at times are subjected to freezing temperatures necessitating, as nearly as possible, water-tight construction.

Bureau of Standards' research paper R. P. 683, "A Study of the Properties of Mortars and Bricks and their Relation to Bond," establishes the weakest point in brick work to be at the junction of the solid masonry unit and the mortar.

Parapet walls should be built of the best materials. For all ordinary construction, regardless of the absorption rates of the masonry units, tests and numerous field observations made by competent authorities indicate that parapet walls can be made water-tight by the proper use of mortars which form a solid bond with the masonry units. Mortar mixes shown in the following table prepared by the National Lime Association are eminently satisfactory for this purpose:

STANDARD MORTAR PROPORTIONS FOR ALL TYPES OF MASONRY			
TYPE OF MASONRY	Parts by Volume		
	Lime	Cement	Sand
For all weather-tight unit masonry above grade	2	1	9
Same, richer for increased mortar strength	2	1	7 or 8
Lime, 7 or 8 cu. ft. of putty per 180 lbs. of quicklime or 2.25 cu. ft. of putty per 100 lbs. of hydrate. Cement, 94 lbs. per cu. ft. Sand, 80-85 lbs. per cu. ft. loose and moist.			

WALL COPING—A water-tight coping is equally as important as the kind of masonry materials used in the wall. For a water-tight job, the coping should be laid tight on a full bed of mortar, thoroughly pointed up and properly pitched for drainage.

Copings should be provided with undercut drips. Continuous through wall flashings of fabric or non-corrosive metal should be placed between the coping and the brick work; or, in lieu of continuous flashings, unit pan flashings centered under the coping joints should be provided to prevent infiltration of water into the wall through the coping joints.

FLASHINGS—To be permanently efficient, flashing must:

1. Prevent water from entering the wall at the junction of the wall and the roof deck.
2. Prevent water from entering the wall through open joints in the coping.

The use of properly constructed roof flashings for these purposes cannot be too fully emphasized.

Most roof flashings have been designed to exclude water from the parapet wall, but the methods used have generally failed, resulting in the retention of the moisture that does get into the wall.

The application of hot asphalt, coal tar pitch, roofing felt or metallic materials over one face of the wall or across the top and continued down over one face of the wall actually accelerates disintegration of the masonry beneath the covered surface. If it is assumed that water does enter the wall, provision for its exit must also be considered. Therefore, covering one face of the wall reduces by one-half the area through which the water confined in the wall can escape.

Both faces of parapet walls should be exposed to the weather to permit maximum drying. Roof flashings should not be extended higher than is necessary to guard against the possible accumulation of water on the roof surface under unusual rainfall conditions.

BITUMENS AND FELTS—Specify the same bitumen and felts throughout. Where coal tar pitch is used, all felts should be saturated with the same material. Where asphalt is used, use asphalt saturated felts.

USG FABRIC ROOF COUNTER-FLASHING • • DESCRIPTION

USG Built-up Flashings are manufactured from heavy woven cotton fabric, thoroughly saturated and coated with hot bituminous compound into which is pressed a uniform layer of mineral surfacing. The min-

eral surface retards rapid drying out of the saturants in the fabric and protects the exposed surface of the flashings from abrasive injury. Copper devices attached to the fabric provide anchorage in the raggle.

Flashing Specifications CORRELATIVE PROVISIONS APPLYING TO ROOF FLASHINGS

NOTE—*The construction of deck roofs, parapet walls, curbs, and other vertical surfaces upon or against which flashings are to be applied are not a part of the Roofing Contractor's work and are, therefore, not included in the USG Built-up Flashing Specifications. The following provisions, however, should be included as they apply under the proper heading of the specifications to be executed by others:*

ROOF DECK PROVISIONS—All provisions for the construction and finished condition of the various types of roof decks established under the heading "Correlative Provisions," pages 3 and 4, applying to "Built-up Roofing" shall apply likewise to "Roof Flashings."

FLASHING RAGGLES—The Masonry Contractor shall provide flashing raggles $\frac{1}{2}$ in. wide by $1\frac{1}{2}$ in. deep in all brick or concrete parapet walls, curbs, and other vertical walls above the roof deck surface in strict accordance with specifications established under this heading in "Correlative Provisions," page 4.

NOTE—*On saw-tooth and monitor curbs beneath the sash it is customary for the roofer to extend only the full thickness of the roofing up these inclined slopes without additional flashing reinforcement. While this construction is theoretically satisfactory, additional counter-flashing is needed over the roofing at these points to prevent damage by workmen performing the customary maintenance duties required over these particular sections of the roof.*

NOTE—*Where flashing raggles are to be provided in an existing wall, such as a party or parapet wall surrounding an old roof, the raggle can readily be cut by using a portable electric circular saw, substituting a carborundum disc for the steel saw blade. At re-entrant angles the raggles, obviously, will have to be raked out by hand.*

NAILING STRIPS—The Masonry Contractor shall provide permanent wooden nailing strips in all concrete parapet walls, curbs, or other vertical walls above the roof surface. Nailing strips are to be embedded in and flush with the face of the wall and located 1 inch below and parallel with the raggle groove in strict accordance with specifications established under this heading in "Correlative Provisions," page 4.

CANT STRIPS—Cant strips shall be provided by the General or Masonry Contractor at the junction of the roof deck with all vertical walls and curbs in strict accordance with specifications established under this heading in "Correlative Provisions," page 4.

GENERAL REQUIREMENTS APPLYING TO APPLICATION OF ROOF FLASHING

The Roofing Contractor shall consult with the General and Masonry Contractors at the time parapet walls, curbs, and other vertical walls are being erected and shall furnish the General and Masonry Contractors with sufficient information as to proper location of flashing nailing strips and raggles to assure their proper location and construction in relation to saddles or crickets installed later to effect drainage.

The Roofing Contractor shall also examine all walls or curbs upon or against which roof flashings are to

be applied. He shall determine that the walls or curbs are properly constructed, are smooth and free from sharp projections above or depressions in the plane of the wall or curb surface. He shall check the location and construction of flashing raggles and nailing strips to be certain that they are free from mortar, debris, and forming material and ready to receive the roof flashing. He shall notify the Architect of any defects he considers detrimental to the installation of the roof flashings and shall make sure that all defects are corrected before he begins work.

BOND—The Roofing Contractor shall furnish a United States Gypsum Company Built-up Roof Flashing Endorsement attached to the United States Gypsum Company Guaranty Roof Bond as called for under specifications for Built-up Roofing.

NOTE—The United States Gypsum Company will issue its Built-up Roof Flashing Endorsement not to exceed the term of the Guaranty Built-up Roof Bond in all localities of the United

States where its inspection service is available and whenever USG Bonded Built-up Flashings Nos. 20F or 10F are installed in connection with any USG Bonded Built-up Roof. The roofing and flashings must be installed by a Roofing Contractor approved by the United States Gypsum Company in strict accordance with its Bonded Built-up Roof and Flashing Specifications and subject to the United States Gypsum Company inspection, acceptance, and approval.

MATERIALS AND APPLICATION

USG Built-up Base Flashing

APPLYING TO SPECIFICATIONS NOS. 20F, 10F, 20M, 10FM

NAILS—Simplex flat head roofing nails or galvanized roofing nails driven through flat tin discs shall be used to secure the base flashings to the nailing strips or mortar joints in the wall. Nails shall be not less than 1½ in. long.

TEMPERATURE OF BITUMEN—Temperature of USG (Coal Tar Pitch) (Asphalt) shall never exceed 400 degrees Fahrenheit in the heating kettle.

GENERAL—All felt and fabric shall be laid without wrinkles or buckles.

All end laps of felt and fabric shall be not less than six (6) inches breaking joints in various plies.

All end laps of metal base and cap flashings shall be single or double lock seam construction.

NOTE—Deck Roofing Felts have been extended to the top of the cant strip or on all vertical walls four (4) inches under the various specifications for Built-up Roofs.

BASE FLASHING—Apply three (3) plies of USG (Tar) (Asphalt) Saturated Rag Felts weighing fifteen (15)

pounds per one hundred (100) square feet, single thickness, embedded in individual moppings of hot USG (Coal Tar Pitch) (Asphalt). Felts shall be applied in hot bitumen in separate strips not more than ten (10) feet in length and in unbroken widths extending from the lower edge of the raggle, down the wall, across the face of the cant strip, and out over and joined to the deck roofing in feathered edge construction. The first ply shall be extended out on the deck roofing not less than two (2) inches beyond the toe of the cant strip. The second and third plies shall both be extended not less than three (3) inches beyond the toe of the cant strip.

The base flashing felts shall be nailed at the top every eight (8) inches (in the horizontal or vertical mortar joints) (to the wood nailing strip) immediately below the raggle groove.

The exposed edge of the third or top ply of the base flashing extending out on the deck roofing shall be covered and additionally reinforced with a strip of felt not less than six (6) inches wide thoroughly and firmly embedded in and top coated with hot bitumen.

• • •

Specification No. 20F

USG 20-YEAR BONDED FABRIC COUNTER-FLASHING

(FOR DETAIL, SEE PAGE 42)

The counter-flashing shall extend from the raggle, down the wall, across the face of the cant strip and out over the deck roofing not less than two (2) inches.

Install USG 2 Ply Mineral Surfaced Extra Heavy Fabric Counter-flashing by bending the copper fastening device and inserting it full depth into the raggle in such manner that the flat base of the copper fastener shall set flush upon the lower lip of the raggle and the prongs on the upper section of the copper fastener shall make permanently tight contact with the upper lip of the raggle.

Completely fill the raggle groove with USG Plastic Caulking Compound forced or pressed into the groove with a trowel or wooden paddle.

The unattached flaps or sections of the counter-flashing shall be carefully lifted to permit a complete uniform mopping of hot bitumen to be applied over the surface of the underlying base flashing and between the two plies of the fabric counter-flashing. Into these moppings, while hot, the individual plies of the fabric counter-flashing shall be pressed and embedded so that at no point shall fabric touch felt or fabric touch fabric.

Specification No. 10F

USG 10-YEAR BONDED FABRIC COUNTER-FLASHING

(FOR DETAIL, SEE PAGE 42)

The counter-flashing shall extend from the raggle, down the wall, across the face of the cant strip and out over the deck roofing not less than two (2) inches.

Install USG 1 Ply Mineral Surfaced Extra Heavy Fabric Counter-flashing by bending the copper fastening device and inserting it full depth into the raggle so that the flat base of the fastener shall set flush upon the lower lip of the raggle and the prongs on the upper section of the fastener shall make tight contact with the upper lip of the raggle.

Completely fill the raggle groove with USG Plastic Caulking Compound forced or pressed into the groove with a trowel or wooden paddle.

The unattached flap or section of the counter-flashing shall be carefully lifted to permit a complete uniform mopping of hot bitumen to be applied over the surface of the underlying base flashing. Into this mopping, while hot, the fabric counter-flashing shall be pressed and embedded so that at no point shall fabric touch felt.

Specification No. 20M

USG METAL BASE and CAP-FLASHING

(FOR DETAIL, SEE PAGE 42)

Install a (16 oz. cold rolled copper) (specify metal) metal base flashing in strips not more than ten (10) feet long and in unbroken widths extending from the lower edge of the raggle, down the wall, across the face of the cant strip, and out over the deck roofing not less than four (4) inches. Metal base flashing shall be set and firmly embedded in a mopping of hot USG (Coal Tar Pitch) (Asphalt) and nailed to the roof deck every eight (8) inches. The full width of the edge on the deck roofing and the nails shall be covered with two (2) strips of (Tar) (Asphalt) saturated felt not less than eight (8) inches wide embedded in and top coated with a complete mopping of hot bitumen.

A (16 oz. cold rolled copper) (specify metal) Metal Cap-Flashing with a four (4) inch exposed apron, having a hemmed edge at the bottom, shall be installed and securely anchored in the raggle.

Completely fill the raggle groove with USG Plastic Caulking Compound forced or pressed into the groove with a trowel or wooden paddle.

NOTE—A Through Wall Flashing with a four (4) inch exposed apron, having a hemmed edge at the bottom, may be substituted for the cap-flashing set in a raggle above specified.

Specification No. 10FM

USG FELT ROOFING BASE and METAL CAP-FLASHING

(FOR DETAIL, SEE PAGE 42)

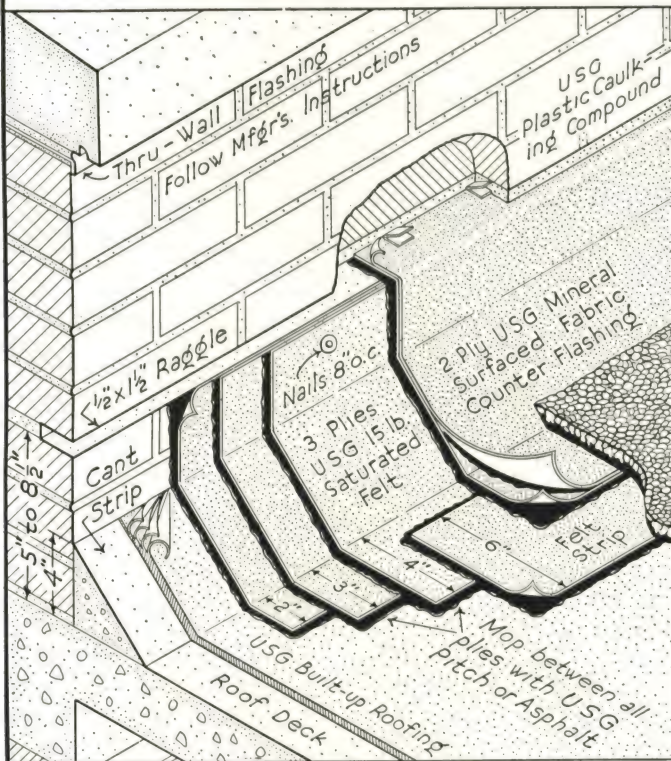
Apply one (1) ply of 75 lb. USG Mineral Surfaced Surfaced Roofing embedded in a uniform mopping of USG (Coal Tar Pitch) (Asphalt). The Mineral Surfaced Roofing base Flashing shall be applied in strips not more than ten (10) feet in length and in unbroken widths extending from the lower edge of the raggle, down the wall, across the face of the cant strip and out over the deck roofing not less than six (6) inches. The Mineral Surfaced base flashing shall be nailed at the top every eight (8) inches (in the horizontal or vertical mortar joints) (to the wood nailing strip) immediately below the raggle groove. This may be done at the same time that the underlying felt base flashing is nailed.

A (16 oz. cold rolled copper) (specify metal) Metal Cap-Flashing with a four (4) inch exposed apron, having a hemmed edge at the bottom, shall be installed and securely anchored in the raggle.

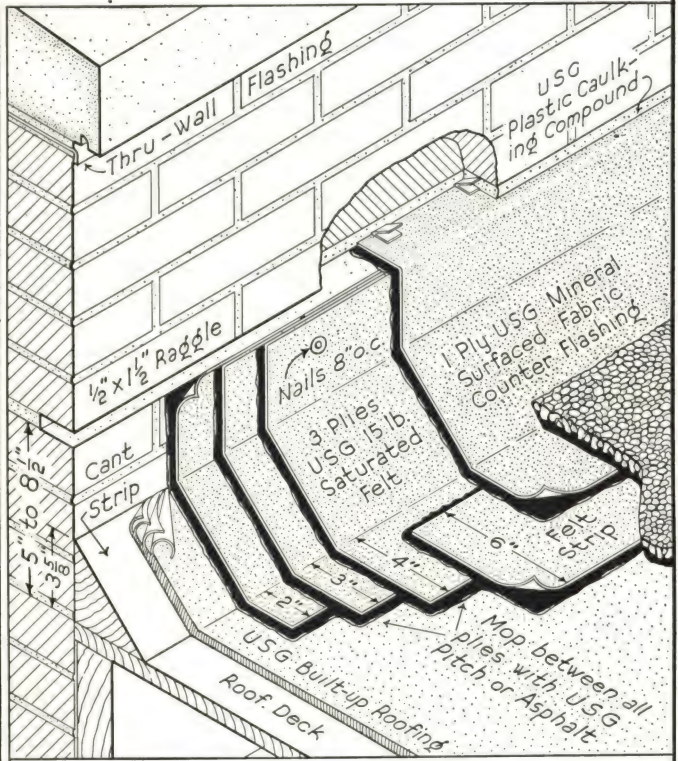
Completely fill the raggle groove with USG Plastic Caulking Compound forced or pressed into the groove with a trowel or wooden paddle.

NOTE—A Through Wall Flashing with a four (4) inch exposed apron, having a hemmed edge at the bottom, may be substituted for the cap-flashing set in a raggle above specified.

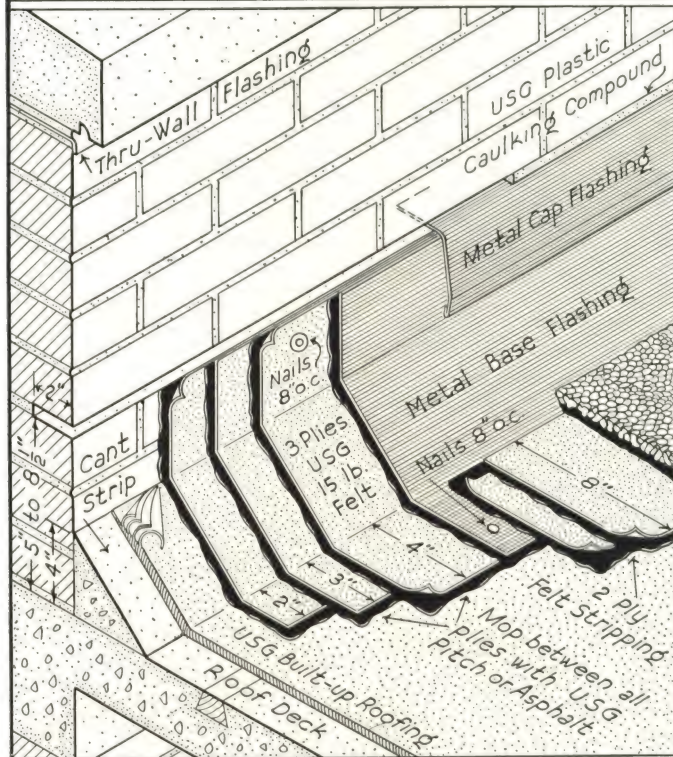
USG FLASHING DETAILS



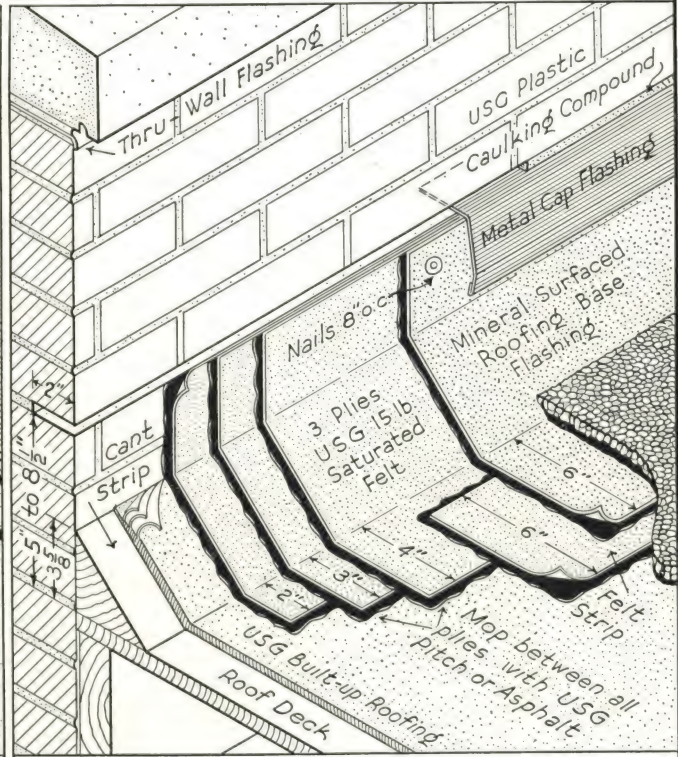
SPECIFICATION NO. 20F USG 20 YEAR
BONDED FABRIC COUNTER FLASHING



SPECIFICATION NO. 10F USG 10 YEAR
BONDED FABRIC COUNTER FLASHING

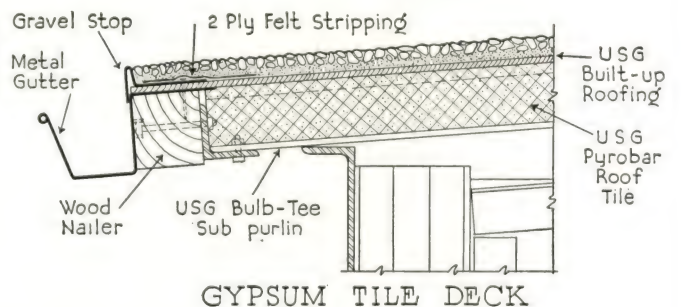
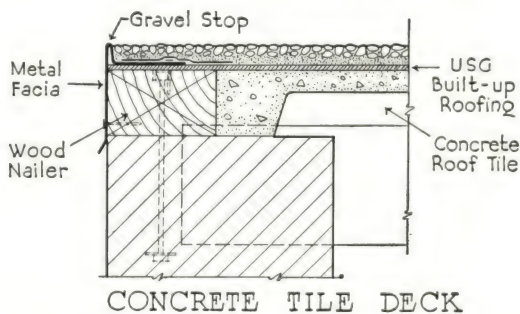
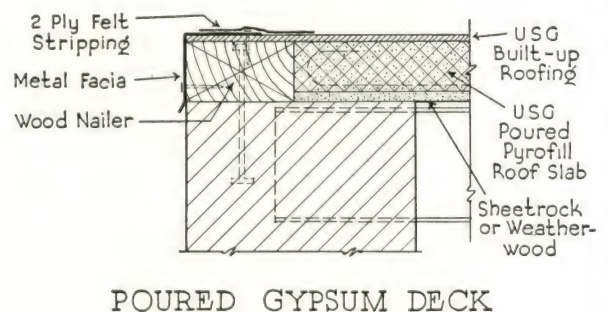
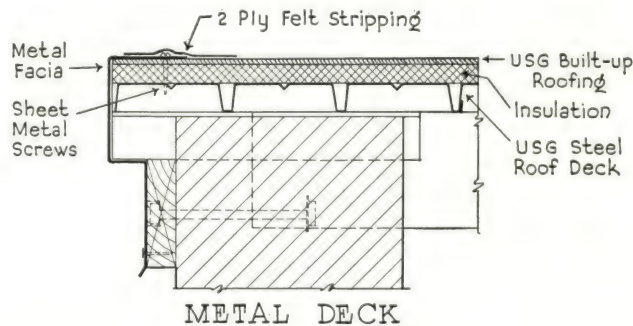
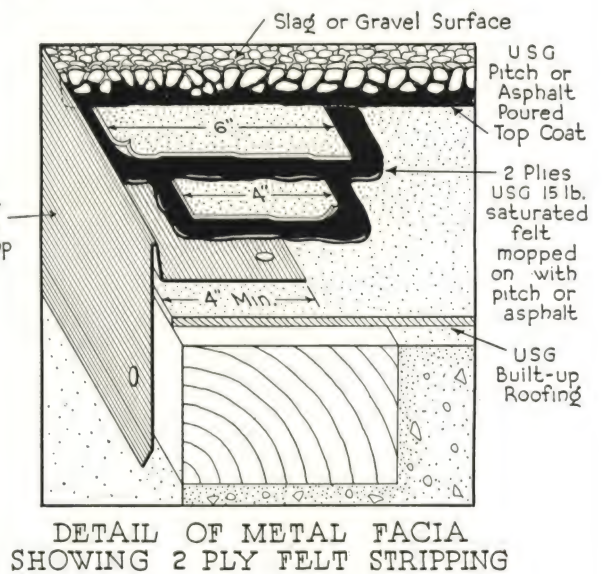
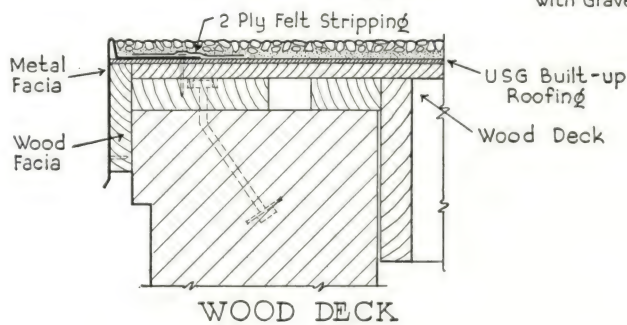
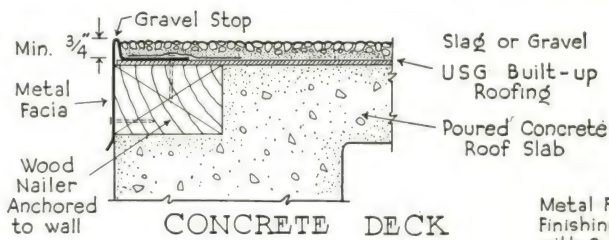


SPECIFICATION NO. 20M
METAL BASE AND CAP FLASHING

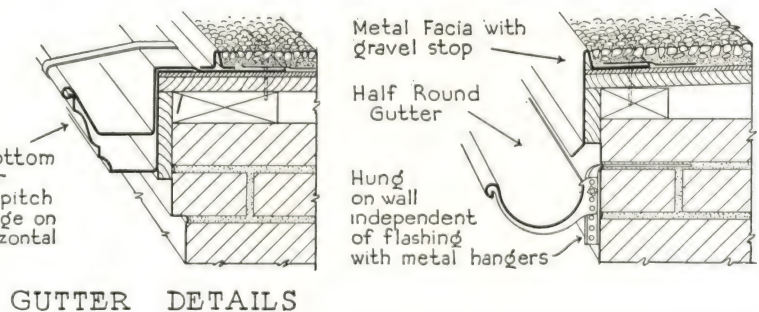
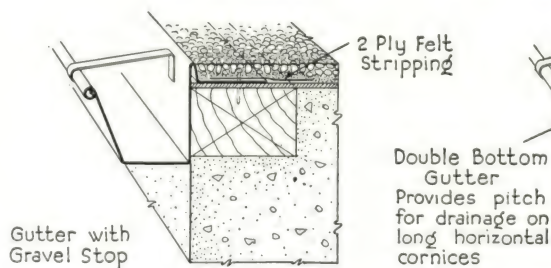


SPECIFICATION NO. 10FM
FELT BASE - METAL CAP FLASHING

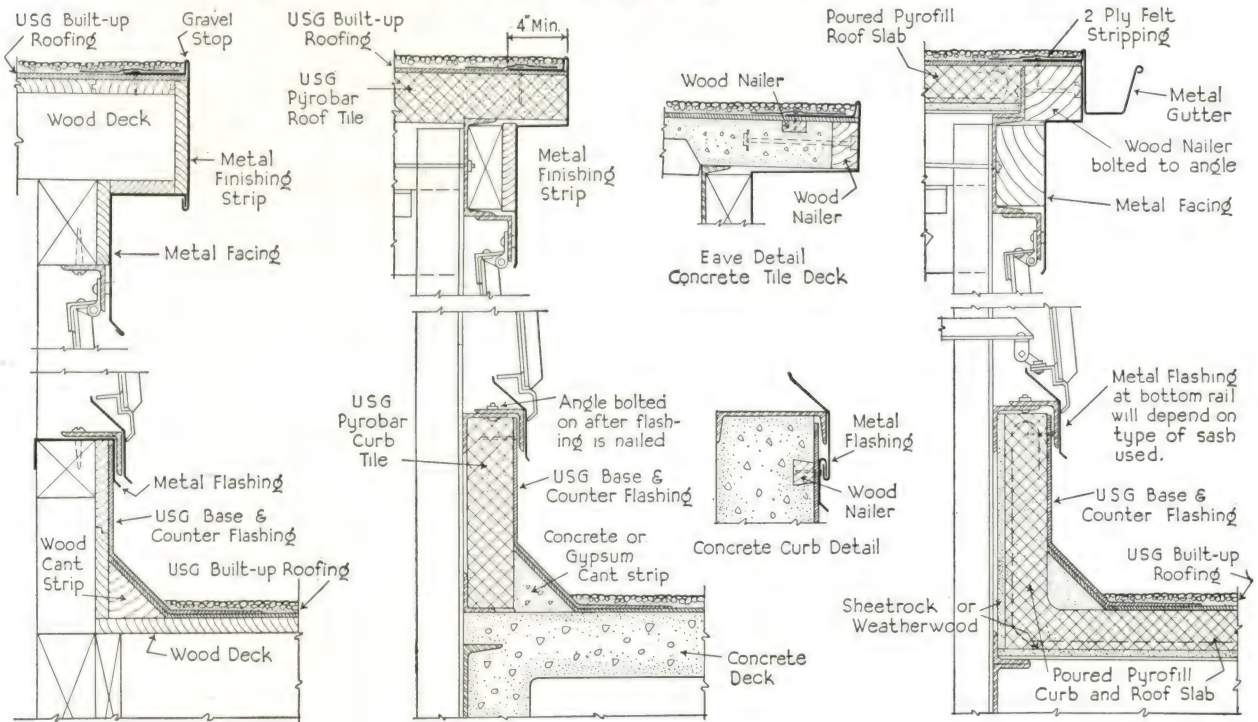
USG FLASHING DETAILS



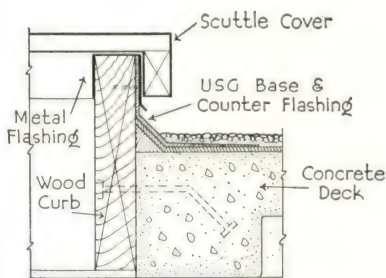
DETAILS OF ENDS AND EAVES OF VARIOUS TYPES OF ROOF DECKS



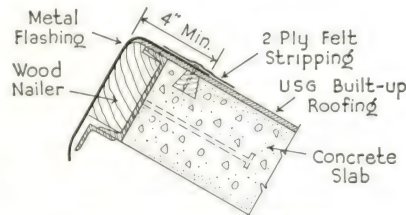
USG FLASHING DETAILS



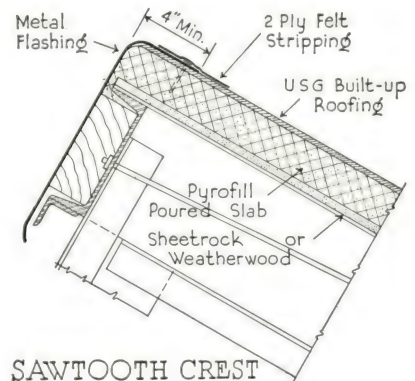
DETAILS OF MONITOR CURB AND EAVE FLASHING



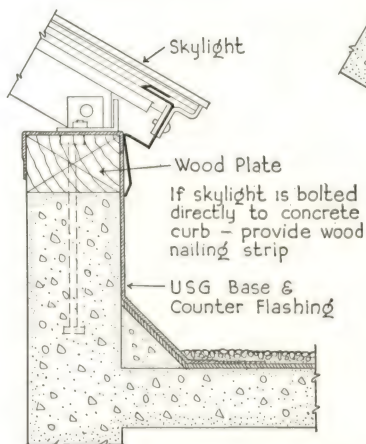
SCUTTLE DETAIL



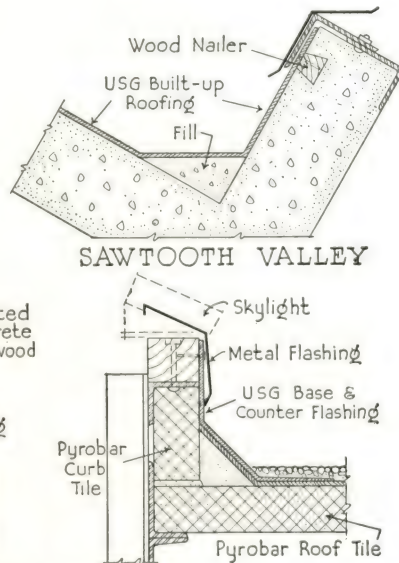
SAWTOOTH CREST



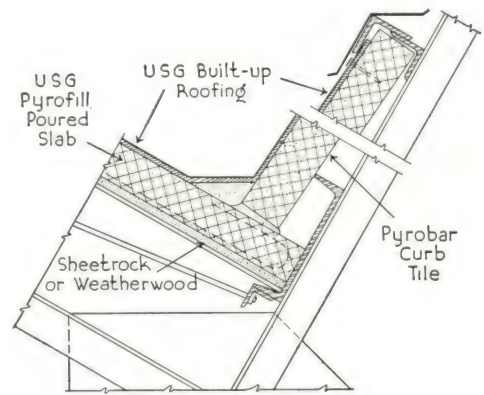
SAWTOOTH CREST



SKYLIGHT CURB DETAILS

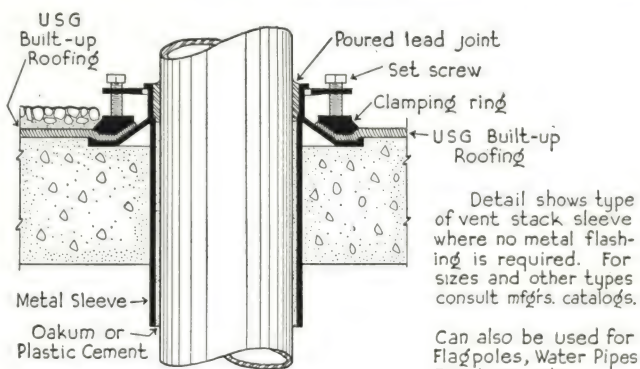


SAWTOOTH VALLEY



SAWTOOTH VALLEY

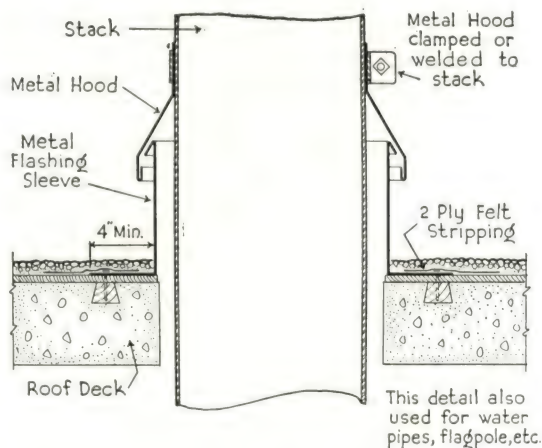
USG FLASHING DETAILS



VENT STACK SLEEVE

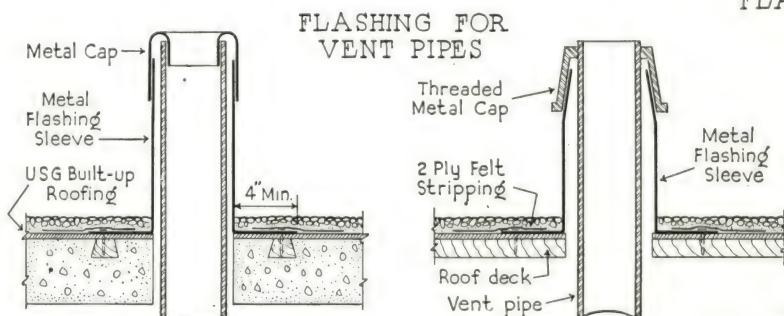
Detail shows type of vent stack sleeve where no metal flashing is required. For sizes and other types consult mfgs. catalogs.

Can also be used for Flagpoles, Water Pipes, Fire Lines, etc.

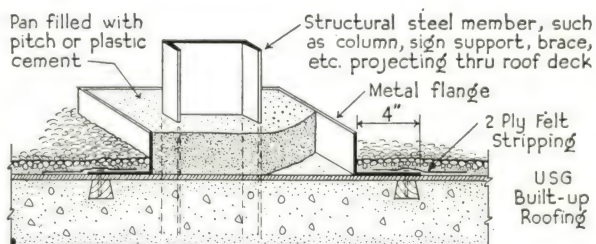
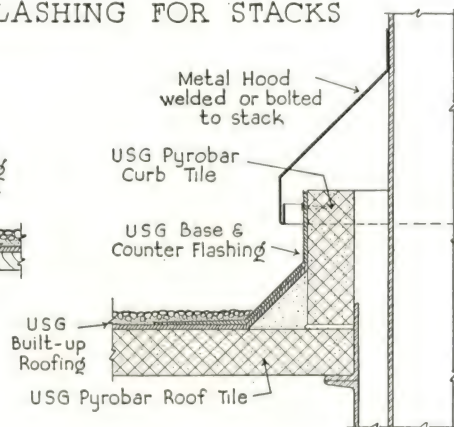


This detail also used for water pipes, flagpole, etc.

FLASHING FOR STACKS



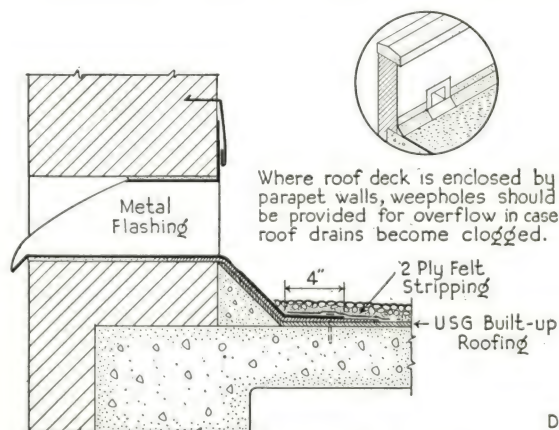
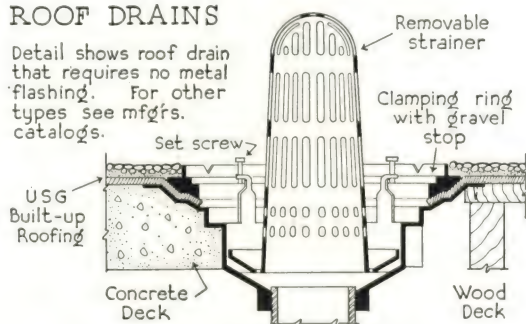
FLASHING FOR VENT PIPES



FLASHING FOR STRUCTURAL MEMBERS

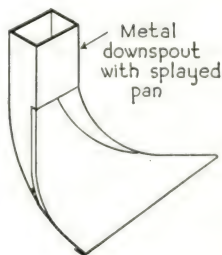
ROOF DRAINS

Detail shows roof drain that requires no metal flashing. For other types see mfgs. catalogs.

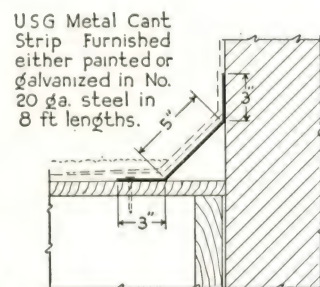


WEEPHOLE IN PARAPET WALL

Where roof deck is enclosed by parapet walls, weepholes should be provided for overflow in case roof drains become clogged.



Downspouts emptying on gravelled roofs should have splayed outlets to spread force of water.



METAL CANT STRIP

UNITED STATES GYPSUM COMPANY

Roofing Products

STRIP SHINGLES

Quad Shingles
Tapered Shingles
4-in-1 Square Butt Shingles
3-in-1 Square Butt Shingles
Hexagon Shingles
Thatch Shingles
Tritab Shingles
Brick Siding

INDIVIDUAL SHINGLES

Arro-Lock Shingles
Grip Lock Shingles
Super-Tite Shingles
Individual Shingles

ROLL ROOFING

Hex-Roll Roofing
Diamond Point Roll Roofing
Style "A" Roll Roofing
Sil-O-Ett Roll Roofing
Adamant Mineral Surfaced Roll Roofing
Paragon Mineral Surfaced Roll Roofing
Zeen-X Corrugated Roll Roofing
Imperial Mica Surfaced Roll Roofing
Dixie Talc Surfaced Roll Roofing



Saturated Sheathing
Building Papers
Starter Strips

BUILT-UP ROOFING

Asphalt Saturated Felt
Tar Saturated Felt
60 lb. Asphalt Saturated Base Sheet
45 lb. Asphalt Saturated Base Sheet
30 lb. Asphalt Saturated Base Sheet
Mineral Surfaced Built-up Roll Roofing
Sel-Vi-Lap Mineral Surfaced Cap Sheet
Sanded Surfaced Asphalt Cap Sheet
Asphalt Saturated Cotton Fabric
Tar Saturated Cotton Fabric
Asphalt
Coal Tar Pitch
Refined Coal Tar
Fabric Roof Counter-flashing

ROOF COATING and CEMENT

Roof Cement (Plastic)
Asphalt Roof Coating
Asbestos Fiber Coating
Special Flashing Cement
Plastic Caulking Compound

General Commodities

PLASTER BASES—PLASTERS PLASTERING SYSTEMS

Red Top Rocklath—Red Top Metal Lath and Accessories—
USG Resilient Plastering Systems—Standard X Plastering
System—Base Coat Plastering Materials—Plaster Finishes

WALLBOARDS and SHEATHING BOARDS

Sheetrock—Joint Systems—Sheetrock Panelwood—Wood
Grained Sheetrock—Sheetrock Resilient System—Insulating
Sheetrock—Sheetrock Tile Board—Red Top Fiber Wall-
board—Gyplap Sheathing

ENGINEERING SALES DIVISION SOUND CONTROL SERVICE

USG Acoustone—Sabinite Acoustical Plaster—Quietile—Per-
fatile—USG System of Sound Insulation—Trembar Resilient
Machinery Mountings

ENGINEERING SALES DIVISION FIREPROOFING PRODUCTS

Sheetrock-Pyrofill Roof Construction—Pyrobar Pre-Cast Roof
Tile—Red Top Rib Floors—2-in. Metal Edge T and G Floor
and Roof Tile—Hydrocal Mastic Flooring—Pyrobar Pre-Cast
Ceiling Tile and 2½-in. T and G Floor and Roof Tile—USG
Steel Roof Deck—Pyrobar Partition and Furring Tile—Pyro-
bar Beam and Girder Fireproofing

THERMAL INSULATION PRODUCTS

Weatherwood Insulating Board and Lath—Insulating Sheet-
rock and Rocklath—Red Top Insulating Wool—Thermofill

OTHER USG PRODUCTS

Paint Products—USG Red Top Basement Windows—Red Top
Coal Doors—Red Top Mason's Lime—USG Agricultural Hy-
drated Lime—Ben Franklin Agricultural Gypsum—Industrial
Products



THE PHILIP CAREY COMPANY...

A ROOF FOR EVERY BUILDING

One type of roofing will not meet all needs and that is why THE PHILIP CAREY COMPANY through more than sixty years of experience in the manufacture and application of roofing materials has developed a complete line of roofs. From the smallest temporary shed to the finest type of permanent construction you will find a Carey Roof designed to meet your exact requirements. In this book are described the various types, weights and finishes of Carey Prepared Roofing materials.

Asbestos Shingles and Siding

Careystone—Asbestos-Cement Shingles—have that time-mellowed, weather-aged look that formerly only age could bring. By a scientific process selected Portland Cement is reinforced with everlasting asbestos fibre and combined under great pressure into a permanent shingle possessing natural properties that enable it to resist the destructive influences of time, weather and fire. Careystone Shingles cannot burn, even in a furnace, and in addition possess that peculiar property of increasing in toughness and strength upon exposure to the elements. Careystone Asbestos-Cement Shingles are made in both roofing and siding units.

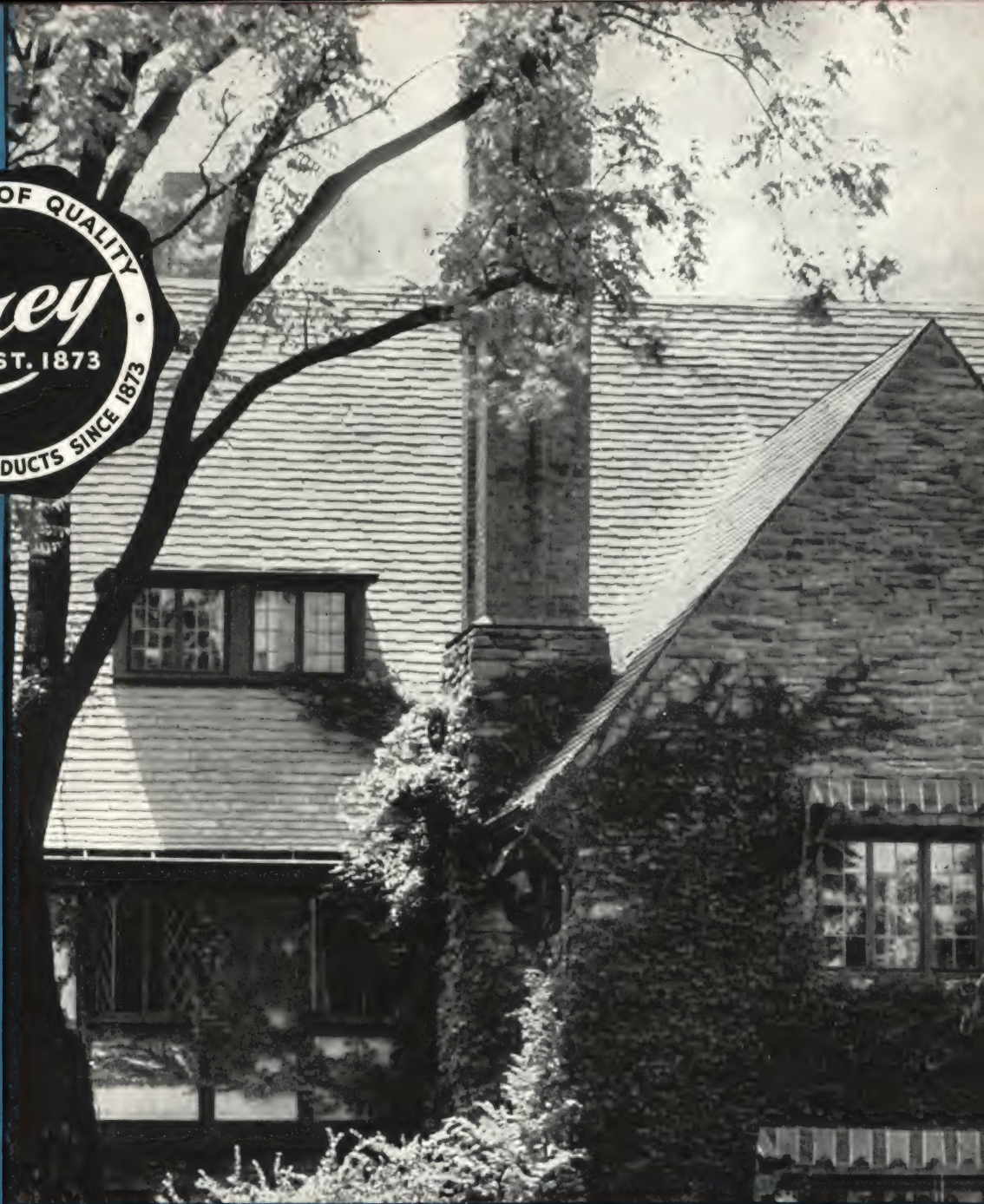
Asphalt Shingles

Carey Asfaltslate Individual Shingles represent the standard of quality in composition shingles. Conventional in design, they assure the maximum amount of roof protection. These shingles have a base of tough rag felt thoroughly saturated and coated with asphalt. A layer of colored mineral granules is then applied to provide a durable wearing surface of natural beauty in colors to appeal to individual tastes. Carey Asfaltslate Shingles are built especially rugged and substantial to give extra years of trouble free service. They are proof against all ordinary fire risks and need no paint or other upkeep expense.

SEE COLOR CHART ON BACK COVER

(Page 2)





ASBESTOS SHINGLES

ASPHALT SHINGLES

PREPARED ROOFINGS

ROOF PAINTS



THE PHILIP CAREY COMPANY...

A ROOF FOR EVERY BUILDING

One type of roofing will not meet all needs and that is why THE PHILIP CAREY COMPANY through more than sixty years of experience in the manufacture and application of roofing materials has developed a complete line of roofs. From the smallest temporary shed to the finest type of permanent construction you will find a Carey Roof designed to meet your exact requirements. In this book are described the various types, weights and finishes of Carey Prepared Roofing materials.

Asbestos Shingles and Siding

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Asphalt Shingles

Carey Asfaltslate Individual Shingles represent the standard of quality in composition shingles. Conventional in design, they assure the maximum amount of roof protection. These shingles have a base of tough rag felt thoroughly saturated and coated with asphalt. A layer of colored mineral granules is then applied to provide a durable wearing surface of natural beauty in colors to appeal to individual tastes. Carey Asfaltslate Shingles are built especially rugged and substantial to give extra years of trouble free service. They are proof against all ordinary fire risks and need no paint or other upkeep expense.

SEE COLOR CHART ON BACK COVER

(Page 2)



Cork Insulated Shingles

Carey Cork Insulated Shingles are made in the same manner as Carey Asfaltlate Shingles but during the process of manufacture a layer of ground cork is added to the underside of the shingle, thus providing an effective roof insulation that is automatically applied at the same time the roof is put on, eliminating the extra cost of material and labor involved when separate roof insulation is used. The cost of Carey Cork Insulated Shingles is only slightly more than that of ordinary Asphalt Shingles which cannot provide this additional Insulating value.

Strip Shingles

The manufacturing methods used to produce Carey Strip Shingles are the same as used in manufacturing Individual Carey Asphalt Shingles, except that in the final operation the finished shingle is cut into multi-units (2, 3 or 4 shingles in one strip). A feature of Carey Strip Shingles is the fact that they can be applied faster than Individual Shingles which means a saving in application cost. Carey Strip Shingles are offered in both the Hexagonal and Square Tab Styles and in several weights and sizes to meet various requirements of service and cost.

Prepared Roofing • • Paints

Prepared Roofing—To meet the demand for a good, low-price, quickly applied roofing material, THE PHILIP CAREY COMPANY offers a complete line of Prepared or Roll Roofing. Various weights and finishes are manufactured from best grade felts and asphalts.

Paints—There is a Carey Paint, Coating or Cement to repair leaks, prolong the life of and give protection to all types of roofs. Paints for hot and cold metal surfaces; for concrete and wood structures; Coatings for basement walls; Plastic Cements for boiler walls, dry kilns, etc.

SEE COLOR CHART ON BACK COVER

(Page 3)





Careystone

ASBESTOS-CEMENT SHINGLES . . .

American Method

(Standard Weight)

Distinctive Careystone Weather-Aged texture in enduring asbestos and cement, combine to make this a most attractive and durable shingle. Illustration at right shows conventional American Method application.

Size $8 \times 16 \times \frac{3}{16}$ ins.—260 shingles (10 bundles) per square. Exposure 7 ins. Requiring: 520 Needle Point Nails per square.

Colors: Windsor Gray, Georgian Red, Weathered Brown, Tudor Black, Bristol Green.

Weight: Approximately 465 lbs. per square.

Underwriters' Label Class A.



American Method

(Heavy Weight—Made on Special Order Only)

Made of the same material and in the same texture as the shingles described below, only heavier in weight. Illustration at right shows Staggered Method of application.

Size $8 \times 16 \times \frac{5}{16}$ ins.—260 shingles (13 bundles) per square. Exposure 7 ins. Requiring: 500 Needle Point Nails per square.

Colors: Windsor Gray, Georgian Red, Weathered Brown, Tudor Black, Bristol Green.

Weight: Approximately 650 lbs. per square.

Underwriters' Label Class A.



Scotch Method

Scotch Method Shingles have the texture and appearance of the American Method but cost little more than the French Method. An excellent shingle for new homes or for re-roofing.

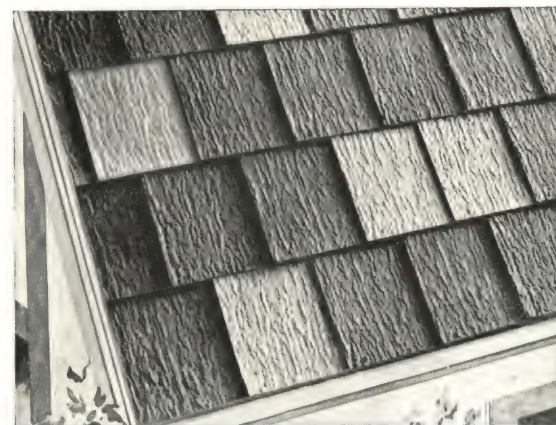
Size $16 \times 16 \times \frac{3}{16}$ in.—*92 shingles (6 bundles) per square. Laid with 3-in. headlap and 4-in. side-lap. Exposure 13x12 ins. Requiring: 184 Needle Point Nails and 92 Copper Storm Nails per square.

Colors: Windsor Gray, Georgian Red, Weathered Brown, Tudor Black, Mottled, Bristol Green.

Weight: Approximately 320 lbs. per square.

Underwriters' Label Class B.

*Actual coverage $99\frac{2}{3}$ sq. ft. Prices quoted on this basis. Note: Can be applied with $5\frac{1}{8}$ in. Side lap requiring 104 shingles per square.



Apply Careystone Shingles over Carey Fibrock Asbestos Felt or Carey Asbestos Roofing.

• • • ASBESTOS-CEMENT SHINGLES



Duplex No. 1

(Made on Special Order Only)

Made with uniform width tabs for those who prefer a definite roof pattern.

Weather-Aged texture, size $16 \times 16 \times \frac{3}{16}$ ins. (both tabs $7\frac{5}{8}$ ins. wide), 130 shingles (10 bundles) per square. Requiring: 260 Needle Point Nails per square. Exposure 7 ins.

Colors: Windsor Gray, Bristol Green, Georgian Red, Weathered Brown and Tudor Black.
Weight: Approximately 465 lbs. per square.
Underwriters' Label Class A.



Duplex No. 2

(Made on Special Order Only)

Made with tabs of two widths which are automatically alternated, making a roof of broken design or pattern.

Weather-Aged texture, size $16 \times 16 \times \frac{3}{16}$ ins. (one tab $5\frac{5}{8}$ ins., one tab $9\frac{5}{8}$ ins.). 130 shingles (10 bundles) per square. Requiring: 260 Needle Point Nails per sq. Exposure 7 ins.

Colors: Windsor Gray, Bristol Green, Georgian Red, Weathered Brown, Tudor Black.

Weight: Approximately 465 lbs. per square.
Underwriters' Label Class A.

Note: No. 3 Duplex Shingles—Random Widths—equal quantities of No. 1 and No. 2 Duplex Shingles in a factory mixed bundle can be furnished at a slight additional cost. Will produce a roof of random widths when applied as taken from the bundle.



French Method

Made of Careystone (Asbestos and Cement) but with a smooth stone-like surface combining beauty, protection and permanent service at low cost.

Size $16 \times 16 \times \frac{3}{16}$ ins.—Smooth Finish. Exposure 13×13 ins.—3-in. headlap. 86 shingles ($5\frac{3}{8}$ bundles) per square. Requiring: 172 Needle Point Nails and 86 Storm Nails per sq.

Colors: Gray, Red, Brown, Black, Mottled, Green.

Weight: Approximately 265 lbs. per square.
Underwriters' Label Class B.

Apply Careystone Shingles over Carey Fiberock Asbestos Felt or Carey Asbestos Roofing.



Careystone

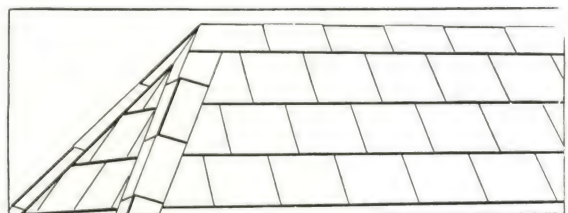
HIP and RIDGE SHINGLES—RIDGE ROLL—STARTERS

Hip and Ridge Shingles

Size $5\frac{1}{2}$ to 6 ins. wide, $16\frac{1}{4}$ ins. long, $\frac{3}{16}$ in. thick. 336 shingles per 100 lineal feet. 30 shingles per bundle. Requiring: 672 Needle Point Nails per 100 lineal feet.

Colors: Windsor Gray, Georgian Red, Weathered Brown, Tudor Black, Bristol Green.

Weight: Approximately 415 lbs. per 100 lineal feet.

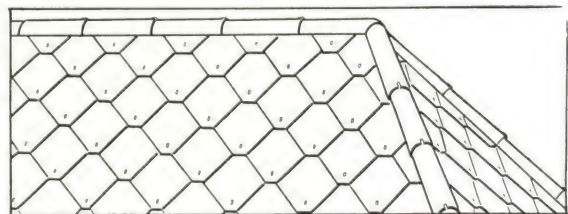


Curved Ridge Roll

Size 16-in. lengths— $\frac{1}{4}$ -in. thick. 93 sections per 100 lineal feet. Requiring: One Ridge Roll Fastener for each section.

Colors: Windsor Gray, Georgian Red, Weathered Brown, Tudor Black, Mottled, Bristol Green.

Weight: Approximately 185 lbs. net (316 lbs. crated) per 100 lineal feet.

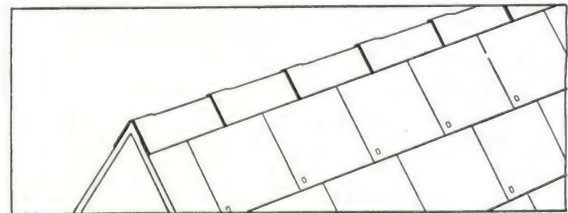


Angle Ridge Roll

Size 16-in. lengths— $\frac{5}{16}$ -in. thickness. 88 sections per 100 lineal feet. Requiring: One Ridge Roll Fastener per section.

Colors: Windsor Gray, Georgian Red, Weathered Brown, Tudor Black, Bristol Green, Mottled.

Weight: Approximately 215 lbs. net (250 lbs. crated) per 100 lineal feet.



American Method Starter

(Standard Weight)

Size $8\frac{1}{8} \times 16\frac{1}{4} \times \frac{1}{8}$ ins.—75 pieces required for each 100 lineal feet. 20 pieces per bundle. Requiring: 150 Needle Point Nails per 100 lineal feet.

Colors: Gray, Brown, Black.

Weight: Approximately 130 lbs. per 100 lineal feet.

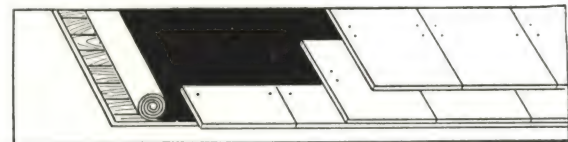
American Method Starter—Heavy Weight

Same as above except thicker and heavier.

Size $8\frac{1}{8} \times 16\frac{1}{4} \times \frac{1}{8}$ ins.

Colors: Gray, Brown, Black.

Weight: Approximately 185 lbs. per 100 lineal feet.



French Method Eave Starter

Size $4 \times 16 \times \frac{3}{8}$ ins.—75 pieces (3 bundles) required for each 100 lineal feet. Requiring: 150 Needle Point Nails per 100 lineal feet.

Colors: Gray, Brown, Black.

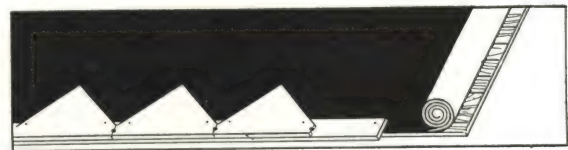
Weight: 60 lbs. per 100 lineal feet (approximately).

French Method Second Starter

Size $20\frac{1}{2}$ ins. wide by $\frac{3}{8}$ in. thick—60 pieces (3 bundles) required for each 100 lineal feet. Requiring: 120 Needle Point Nails per 100 lineal feet.

Colors: Gray, Red, Brown, Black, Mottled, Green.

Weight: Approximately 120 lbs. per 100 lineal feet.

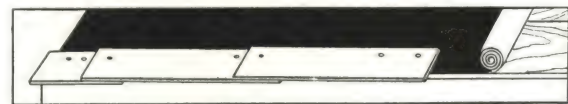


Scotch Method Starter

Size $4 \times 16 \times \frac{3}{8}$ ins.—100 pieces (5 bundles) required for each 100 lineal feet. Requiring: 100 Needle Point Nails per 100 lineal feet.

Colors: Gray, Brown, Black.

Weight: Approximately 90 lbs. per 100 lineal feet.



Accessories for Careystone Shingles

Asbestos Shingle Cutter with or without Notching Attachment.

Copper Ridge Roll Fasteners as illustrated (55 per lb.)—1 piece needed for each Ridge Roll.

Copper Storm Nails as illustrated (195 nails per lb.)—1 needed for each French or Scotch Method Shingle.

Galvanized Needle Point Nails ($1\frac{1}{4}$ in., 210 nails per lb.; $1\frac{1}{2}$ in., 195 nails per lb.; 2 in., 175 nails per lb.)—2 for each Shingle, Starter, or Ridge Roll section. $1\frac{1}{4}$ in. furnished unless otherwise specified.

Copper Needle Point Nails ($1\frac{1}{4}$ in., 250 nails per lb.; $1\frac{1}{2}$ in., 200 nails per lb.; 2 in., 165 nails per lb.)—2 for each Shingle, Starter, or Ridge Roll section. $1\frac{1}{4}$ in. furnished unless otherwise specified.

Red, Green, Brown, Black, or Gray Slater Cement furnished in 100 and 300-lb. steel drums, and 10, 25, and 50-lb. pails.



• • • ASBESTOS CEMENT SIDING



"V" Top Siding

Careystone "V" Top Siding gives complete weather protection and at the same time presents a very pleasing and architecturally correct appearance due to the American Method of application. The saving in material as a result of the cone-shaped top and the economy of application caused by the size of this shingle result in a surprisingly low original cost.

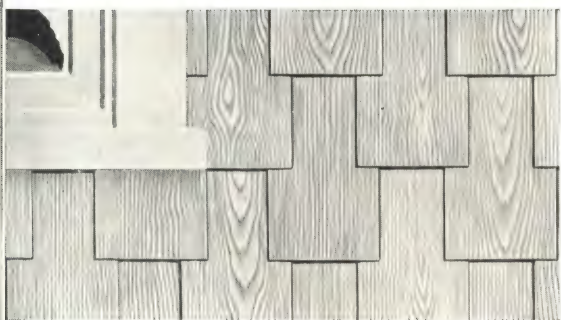
Size: 16x16x3/16 in.

Total 120 pieces per square.

Head lap 1 in. Exposure 7½x16 in.

Colors: Manchester Gray, Mottled.

Weight: Approximately 275 lbs. per square.



Queen Anne Siding

The decided vertical lines of Queen Anne Wide Spaced Siding are particularly adaptable to bungalows or one-story buildings where an impression of height is desired.

Size: 8x16x⅜ in.

Colors: Manchester Gray, Sea Green.

Weight: Approximately 245 lbs. per square.

160 shingles per square.



Cape Cod Shingles

This unit with its straight horizontal lines can be used effectively on tall residences or buildings where it is desired to diminish the appearance of height.

Size: 8x16x⅜ in.

Exposure: 5½x16 ins.

4 rolls (220 feet) 7¼ in. wide aluminum surfaced waterproofing felt furnished with each square waterproof vertical joints.

Colors: Sea Green, Manchester Gray.

Weight: Approximately 255 lbs. per square.

165 shingles per square.



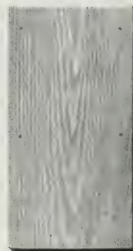
Old Colony Careystone

Combines attractive appearance with economy of application. Ideal for use over old wood siding or on new construction where the element of cost is an important factor.

Size: 12x32x3/16 in. 42 pieces to the square.

Color: Manchester Gray.

Weight: Approximately 190 lbs. per square.





Everything

PROTECTION

Dependable waterproof protection always has been and always will be the first requirement of a good roof, but today home owners are no longer satisfied with a roof that merely keeps out the rain and snow. They are insulation conscious and want a roof that will keep their home more comfortable the year 'round—*warmer in winter, cooler in summer.*

Several years ago the Carey Research Laboratory—source of many outstanding developments in the roof industry—hit on the original idea of adding a layer of cork to the under side

THE PHILIP



Home of W. S. Taylor, Sledge, Miss.
 "We are very pleased with the appearance of our roof and the insulation against cold weather.
 "One of the reasons we selected your shingle was the insulation, and we are pleased to advise that it has lived up to your representation." W. S. Taylor



Home of Robert L. Stevenson, Arc Medford, Mass.
 "Proof of the value of the insulation of these shingles is shown by the fact that always during a snow storm the roof will retain the snow for a longer time than surrounding homes with ordinary shingles." Robert L. Stevenson

YOU CAN EXPECT OF A ROOF

... INSULATION ... BEAUTY

of an asphalt shingle to retard the passage of heat through the roof. The result was the Carey Cork Insulated Shingle—a regular Carey Asfaltslate Shingle with a layer of cork added to the under side which acts as a barrier to heat and cold—both roof protection and roof insulation applied in one operation and at *one labor cost*.

On thousands of roofs throughout the country, Cork Insulated Shingles have demonstrated their long lasting roof service and insulating value. Below are shown a few of these homes

together with excerpts of letters received from the owners.

The extra thickness of these shingles, due to the layer of cork on the back, produce deep shadow lines and introduces a distinctive note in roof beauty.

The shapes and colors of Carey Shingles have been developed after years of experience in satisfying the individual preferences of home owners and the rigid requirements of architects and contractors. We will be glad to send you samples.

CAREY COMPANY • • • Lockland, Cincinnati, Ohio

Carey CORK INSULATED SHINGLES



Home of M. A. Garrett, Nashville, Tenn.
"When we built in 1928, we selected Carey Cork Insulated Shingles on account of their insulating qualities.
"The shingles are as good today as when first applied and the rooms are comfortable summer and winter."
M. A. Garrett



Home of Edward F. DeVille, Lancaster, N. Y.
"After having this roofing applied, we found for the first time, the upstairs rooms were comfortable for sleeping.
"From our point of view, the Carey Cork Insulated Shingle is an all-weather, year 'round roof because it also saves fuel for us."
Edw. F. DeVille



Home of J. A. Cayce, Nashville, Tenn.
"In 1927 I built a two-story brick house. I have just made a close examination of the roof and I find it in perfect condition. The cork insulation makes our house very much cooler in summer and much easier to heat in winter."
J. A. Cayce



ASPHALT INDIVIDUAL SHINGLES . . .

Cork Insulated Shingles



Carey Cork Insulated Shingles shed heat and cold as well as water. In addition to a durable roof you get an effective heat barrier at a great saving in material and labor cost. The whole job is done when the roof is put on. They are extra thick, producing heavy shadow lines.

All Carey Asphalt Shingles are made in both plain back and cork insulated types. All cork insulated shingles, except the 12x36-in. thick butt strip, are furnished regularly in Dixie Green and Slate Green colors, other colors furnished on order for 100 squares or more subject to delayed shipment.

The 12x36-in. thick butt Cork Insulated Strip is regularly furnished in Dixie Green, Slate Green, Spring Green, Tile Red, Canyon Red and Blue-Black.

Plain back asphalt shingles are furnished in colors listed after each item described in this catalog.

Asfaltslate Shingles (Large Size)

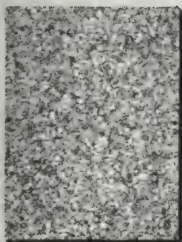
Built on an exceptionally heavy felt base—saturated with a special asphalt. Chipped slate wearing surface. Heavier and stronger than ordinary composition shingles.

Carey Large Size Asfaltslate Shingles are 12x16 ins. in size. Extra Heavy Weight. Exposure 5 ins. 224 shingles (4 bundles) per square.

Colors: Tile Red, Dixie Green, Slate Green, Blue-Black.

Weight: Approximately 325 lbs. per square.
Underwriters' Class C Label.

With Cork Insulation: Weight 345 lbs. per square.
Colors: Slate Green, Dixie Green.



Asfaltslate Shingles (Standard Size)

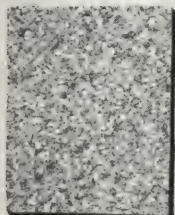
Made the same as the large size Asfaltslate Shingles, only smaller in size and lighter in weight.

Standard Size Asfaltslate Shingles are 9x12 $\frac{3}{4}$ ins. in size. Exposure 4 ins. 372 shingles (4 bundles) per square.

Colors: Indian Red, Dixie Green, Empire Green, Blue-Black, Slate Green.

Weight: Approximately 253 lbs. per square.
Underwriters' Class C Label.

With Cork Insulation: Weight 273 lbs. per square.
Colors: Slate Green, Dixie Green.



A course of Asphalt Saturated Felt or Carey Roll Roofing applied under the shingles assures longer service.

(Page 10)

SEE COLOR CHART ON BACK COVER



• • • CAREY-LOK—CAREY-LOK HEX SHINGLES



Carey-Lok Shingles

(Standard Weight)

Especially designed for application over old roofs.

Size 12x16 ins. Copper anchors furnished. 112 shingles (2 bundles) per square for single thickness application.

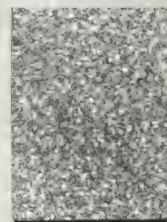
Colors: Dixie Green, Slate Green, Tile Red.

Weight: Approximately 130 lbs. per square.

Underwriters' Class C Label.

With Cork Insulation: Weight 140 lbs. per sq.

Colors: Slate Green, Dixie Green.



Carey-Lok Shingles

(Extra Heavy Weight)

Size 12x16 ins. Copper anchors furnished. 112 shingles (2 bundles) per square for single thickness application.

Colors: Tile Red, Dixie Green, Empire Green, Blue-Black, Slate Green.

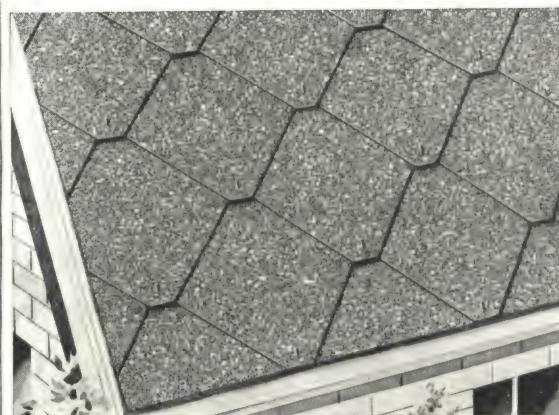
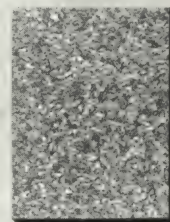
Weight: Approximately 155 lbs. per square.

Underwriters' Class C Label.

Note: If double coverage on either weight of Carey-Lok Shingles is desired, order 188 shingles (1.67 squares) for each square of roof area and apply with 6-in. headlap.

With Cork Insulation: Weight 172 lbs. per sq.

Colors: Slate Green, Dixie Green.



Careylok Hexagonal Shingles

Especially designed for application over old roofs.

Size main body 16x16 in. Copper Anchors furnished. 82 Shingles (2 cartons) per square.

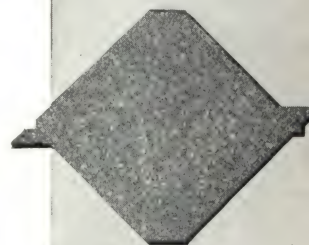
Colors: Dixie Green, Slate Green, Tile Red, Blue-Black.

Weight: Approximately 130 lbs. per square.

Underwriters' Class C Label.

With Cork Insulation: Weight 140 lbs. per sq.

Colors: Slate Green, Dixie Green.



A course of Asphalt Saturated Felt or Carey Roll Roofing applied under the shingles assures longer service.



CAREY-LOK SHINGLES—BRICK SIDING . . .

2 Tab Hexagonal

(Standard Weight)

Size $11\frac{1}{3} \times 36$ in. 2-in. headlap. 86 shingles—packed 2 bundles per square.

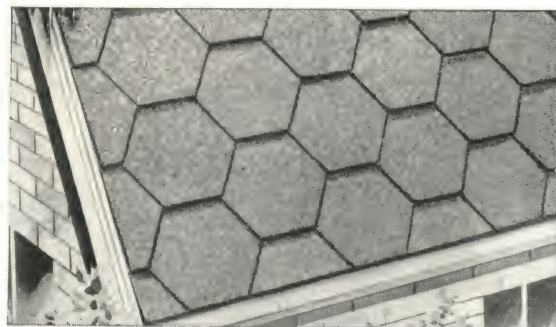
Colors: Indian Red, Tile Red, Empire Green, Blue-Black, Tapestry, Dixie Green, Colorblend, Tropical Blend, Slate Green.

Weight: Approximately 167 lbs. per square.

Underwriters' Class C Label.

With Cork Insulation: Weight 177 lbs. per sq.

Colors: Slate Green, Dixie Green.



2 Tab Hexagonal

(Standard Weight)

Size $12\frac{1}{3} \times 36$ in. 3-in. headlap. 86 strips—packed 2 bundles per square.

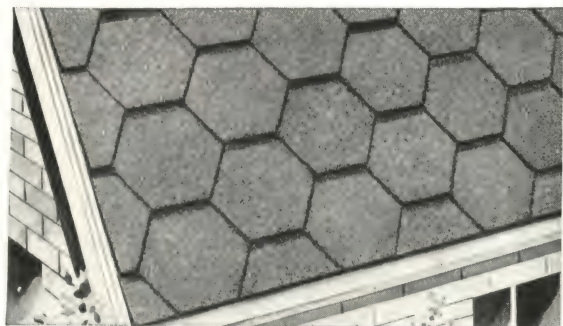
Colors: Indian Red, Dixie Green, Slate Green, Blue-Black.

Weight: Approximately 185 lbs. per square.

Underwriters' Class C Label.

With Cork Insulation: Weight 200 lbs. per sq.

Colors: Slate Green, Dixie Green.



2 Tab Hexagonal

(Standard Weight)

A double coverage shingle. Size $14\frac{1}{2} \times 36$ in. $5\frac{1}{6}$ -in. headlap. 86 shingles—packed 2 bundles per square.

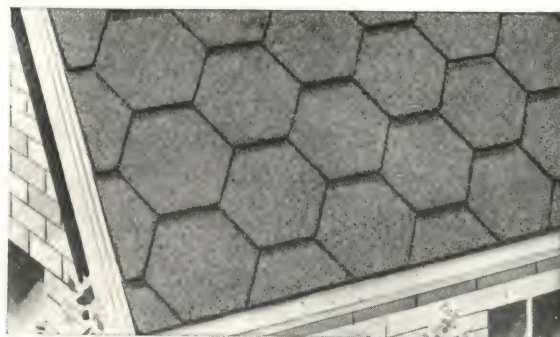
Colors: Tile Red, Dixie Green, Blue-Black, Slate Green.

Weight: Approximately 225 lbs. per square.

Underwriters' Class C Label.

With Cork Insulation: Weight 240 lbs. per sq.

Colors: Slate Green, Dixie Green.



Asphalt Siding Strips

Size 6×36 ins. Gives the appearance of a brick wall when applied over old siding. Self aligning. Exposure $2\frac{5}{8}$ ins. Brick face size $2\frac{1}{8} \times 8\frac{1}{2}$ ins. 153 strips (3 bundles) per square.

Colors: Tile Red, Buff, Tapestry.

Weight: Approximately 210 lbs. per square.



A course of Asphalt Saturated Felt or Carey Roll Roofing applied under the shingles assures longer service.



... ASPHALT STRIP SHINGLES



Cork Insulated Strip Shingles

The addition of ground cork to the underside of this shingle gives the advantage of extra heat insulation value at no extra cost for material or labor. 12x36-in. 2-in. Headlap. Sq. Butt—3 Tab—80 strips packed 3 bundles per sq. Exposure 5 ins. Self spacing.

Thick Butt

Colors: Dixie Green, Blue-Black, Tile Red, Spring Green, Canyon Red, Slate Green.

Weight: Approximately 225 lbs. per square.



4 Tab Square Butt

(Standard Weight)

Size 12½x36 ins. 4½-in. Headlap. 100 strips—packed 3 bundles per square. Laid 4 ins. to the weather. Self spacing.

Colors: Indian Red, Empire Green, Blue-Black, Dixie Green, Slate Green.

Weight: Approximately 266 lbs. per square.

Underwriters' Class C Label.

With Cork Insulation: Weight 281 lbs. per sq.
Colors: Slate Green, Dixie Green.



3 Tab Square Butt

(Thick Butt)

Size 12x36 ins. 2-in. Headlap. 80 strips—packed 2 bundles per square. Laid 5 ins. to the weather. Self spacing.

Colors: Tile Red, Dixie Green, Slate Green, Blue-Black.

Weight: Approximately 210 lbs. per square.

Underwriters' Class C Label.



4 Tab Square Butt

(Standard Weight)

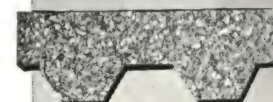
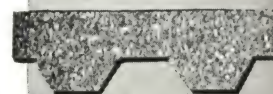
Size 10x36 ins. 2-in. Headlap. 100 strips—packed 2 bundles per square. Laid 4 ins. to weather. Self spacing.

Colors: Indian Red, Dixie Green, Empire Green, Blue-Black, Slate Green.

Weight: Approximately 210 lbs. per square.

Underwriters' Class C Label.

With Cork Insulation: Weight 225 lbs. per sq.
Colors: Slate Green, Dixie Green.



A course of Asphalt Saturated Felt or Carey Roll Roofing applied under the shingles assures longer service.



PREPARED ROOFINGS . . .

Solka Roofing (Mineral Surfaced)

Contains about 65 per cent Solka Fibre; a purified cellulose prepared from the fibre of Northern Spruce. It is combined with carefully selected saturant and coating asphalts, giving the product toughness and qualities of endurance superior to those of any similar roofing product now on the American market.

- *70 lbs. Extra Heavy Weight, Rock Green, no selvage.
- *90 lbs. Special, 2-in. selvage edge, Silver Green, Dixie Green.
- 60 and 70-lb. weights surfaced with superfine granules.
- 90-lb. rolls surfaced with same granules as Lastile.

Lastile Roofing (Mineral Surfaced)

Chipped slate is embedded into the top coating of asphalt, forming a hard, weather resisting surface. A 2-in. smooth selvage is provided along one edge to insure weather-tight laps.

- 75 lbs. Standard Weight, 2-in. selvage edge. Indian Red, Slate Green, Blue-Black.
- 85 lbs. Extra Heavy Weight, 2-in. selvage edge. Indian Red, Silver Green, Empire Green, Dixie Green, Blue-Black, Tile Red, Colorblend.

Color-Age Roofing

Surfaced with red or green ceramic fine granules, Color-Age Roofing provides a low priced colorful roofing for structures where price is an important consideration.

- Medium40 lbs. per roll
- Heavy50 lbs. per roll
- Extra Heavy60 lbs. per roll
- Colors: Red and Green.

Flexible Cement Roofing

A roofing built on a Burlap base, with all nail heads completely covered and protected by a clever lap joint.

- Completing materials furnished.
- 3 pints Quick Drying Lap Cement, 1 lb. Galv. Spiral Nails and Sealing Strips for End Lap.
- *Weight: Approx. 90 lbs. per roll.

Mica-Kote Roofing (Mica Surfaced, Both Sides)

An extra quality roofing of heavy felt base saturated and coated with carefully selected asphalt and finished with Mica Flakes.

- MediumApprox. weight 45 lbs. per square
- *HeavyApprox. weight 55 lbs. per square
- *Extra HeavyApprox. weight 65 lbs. per square
- *Super Grade, Solka.... Approx. weight 75 lbs. per square

Philco Roofing (Grapevine Talc Surfaced)

Philco Roofing is noted for its strength and toughness. Finished in an attractive grapevine effect.

- MediumApprox. weight 45 lbs. per square
- *HeavyApprox. weight 55 lbs. per square

Surety Roofing (Mica Surfaced, One Side—Talc Surfaced, One Side)

Surety Roofing is an economical, smooth surface roofing recommended for any type of building where a low cost, durable roof is desired.

- LightApprox. weight 35 lbs. per square
- MediumApprox. weight 45 lbs. per square
- *HeavyApprox. weight 55 lbs. per square
- *Extra HeavyApprox. weight 65 lbs. per square

Bullseye Roofing (Talc Surfaced)

Bullseye Roofing is built on a felt of good

*Underwriters' Class C Label.

†Underwriters' Class B Label.

Unless otherwise specified all rolls contain 108 sq. ft. (36 ins. wide by 36 ft. long) enough to cover 100 sq. ft. of roof surface

quality but lighter in weight than used in our better grade roofings. Talc finished.

- LightApprox. weight 35 lbs. per square
- MediumApprox. weight 45 lbs. per square
- HeavyApprox. weight 55 lbs. per square

Simplex Roofing

Made to meet the demands for a low priced talc surface prepared roofing.

- Light35 lbs. per roll
- Medium45 lbs. per roll
- Heavy55 lbs. per roll

Careypoint Roofing (Mineral Surfaced)

For re-roofing over old roofs. No nails or lap cement furnished. Rolls contain enough material to cover 100 sq. ft. of roof area allowing for a 2-in. lap.

- Colors: Indian Red, Silver Green, Dixie Green, Blue-Black, Colorblend.

*Weight: Approx. 100 lbs. per square.

Staggered Edge Roofing

An attractive low priced slate surfaced roofing designed to produce a novelty effect when laid on roof.

- No nails or Lap Cement furnished.
- Rolls contain 2 sheets, each 48 ft. long, 17½ ins. wide at outside points.

*Weight: 100 lbs. per roll.

- Colors: Dixie Green with Blue Black edge, Tile Red with Blue Black edge.

Carey White Top Roofing

Reinforced Asbestos Saturated Felt plied together with a top sheet of white asbestos which is adapted for use in built-up roof construction or as a ready roofing. 2-in. selvage edge.

†3 Ply, approx. 55 lbs. per roll.

Furnished with Pyramid Kaps and Nails. We do not recommend that White Top Roofing be applied with nails and lap cement.

Fiberock Roofing (Black Top)

High grade Reinforced Asbestos Felt, thoroughly impregnated with an exceptionally high melting point asphalt, having the felts cemented together with asphalt, making this material both fire retarding and waterproofing.

†3 Ply, 52 lbs. per roll.

†3 Ply, 6 sheets 3x6 ft. per square.

30 sheets (540 sq. ft.) per case, 65 lbs. per square.

Asbestos Roofing (Grapevine Finish)

A strong, compact, reinforced Asbestos Felt, thoroughly impregnated and coated on both sides. Talc surfaced.

53 lbs. per roll.

Rolls 36 ins. wide, 108 sq. ft.

Complete with galvanized nails and lap cement.

Asbestos Roofing (Slate Surfaced)

An unusually strong and compact reinforced Asbestos Felt, thoroughly saturated and coated on top side with tempered asphalt in which slate is embedded. 2-in. selvage edge.

- Colors: Slate Green only carried in stock. Other standard colors made on special orders of 200 rolls or more.
- Complete with galvanized nails and lap cement. †Weight: 85 lbs.

Asbestos Roofing (Double Sanded)

A high grade saturated and coated reinforced Asbestos Felt finished with a good, clean sand. Rolls 36 ins. wide, 36 ft. 6 ins. long, containing 110 sq. ft. 2½-in. selvage edge. Complete with Pyramid Kaps and Nails.



BUILDING PAPERS—FELTS—ASPHALTS

BUILDING PAPERS AND FELTS

Carey waterproofed building papers keep out dampness, dust, grit, and wind; thus insuring a comfortable home.

Blue Plaster Board

Furnished in 250 sq. ft. rolls—(36 ins. wide).
Weight: Approx. 30 lbs. per roll.

Red Rosin Sized Sheathing

Furnished in 500 sq. ft. rolls—(36 ins. wide).
Weights: Approx. 20, 25, 30 and 40 lbs. per roll.

Blue Rosin Sized Sheathing

Furnished in 500 sq. ft. rolls (36 ins. wide)
Weights: Approx. 20 and 30 lbs. per roll.

Slaters Felt

Furnished in 500 sq. ft. rolls—(36 ins. wide).
Weight: Approx. 32 lbs. per roll.

Sheathing Felt (Saturated Only)

Polar Brand—a light weight but tough sheet of saturated rag felt. Furnished in 500 sq. ft. rolls (36 ins. wide).

Weight: Approx. 35 lbs. per roll.

Sheathing Felt (Saturated and Coated)

Furnished in 200 sq. ft. rolls (36 ins. wide).
Weight: Approx. 50 lbs. per roll.

Building and Deadening Felts

Furnished in 50 sq. yd. rolls (36 ins. wide).

- $\frac{3}{4}$ lb. to sq. yd. Approx. wt. 37 lbs. per sq.
- 1 lb. to sq. yd. Approx. wt. 50 lbs. per sq.
- $1\frac{1}{2}$ lbs. to sq. yd. Approx. wt. 75 lbs. per sq.
- 2 lbs. to sq. yd. Approx. wt. 100 lbs. per sq.

Fibreweave Insulating Paper

A strong, dense, jute paper, waterproofed with asphalt. Furnished in 500 sq. ft. rolls (36 ins. wide).

- No. 1—Saturated only. 11 lbs. per square.
Approx. wt. 55 lbs. per roll.
- No. 2—Saturated only. 9 lbs. per square.
Approx. wt. 45 lbs. per roll.
- No. 3—Saturated only. 8 lbs. per square.
Approx. wt. 40 lbs. per roll.
- No. 4—Saturated only. 6 lbs. per square.
Approx. wt. 30 lbs. per roll.
- No. 5—Saturated only. 5 lbs. per square.
Approx. wt. 25 lbs. per roll.
- No. 6—Saturated and coated. 7 lbs. per sq.
Approx. wt. 35 lbs. per roll.
- No. 7—Saturated and coated. 10 lbs. per sq.
Approx. wt. 50 lbs. per roll.

ROOFING ASPHALT AND FELT Underwriters' Label

Asphalt Saturated Rag Felt

- 15 lbs. (432 sq. ft. per roll). Approx. wt. 65 lbs.
- 30 lbs. (216 sq. ft. per roll). Approx. wt. 65 lbs.

Asphalt Saturated Asbestos Felt

Rolls 36 in. wide.

- 15 lb. Fibrock (324 sq. ft. per roll). Wt. 45 lbs. per roll.
- 20 lb. Fibrock (coated one side) (324 sq. ft. per roll). Wt. 60 lbs. per roll.
- 45 lb. Fibrock Base Sheet (coated and sanded two sides) (108 sq. ft. per roll). Wt. 45 lbs.
- 65 lb. Asbestos Base Sheet (coated and sanded two sides) (108 sq. ft. per roll). Wt. 65 lbs.

Tar Saturated Rag Felt

- No. 2 (216 sq. ft. per roll). Wt. 50 lbs. per roll.
- No. 3 (432 sq. ft. per roll). Wt. 50 lbs. per roll.
- 15 lb. Carey-Seal (432 sq. ft. per roll). Wt. 65 lbs. per roll.

Manco Asphalts

- Manco Asphalt (400-lb. drums).
- Manco Asphalt (50-lb. drums).
- Flat Manco (for flat roofs) will be furnished unless Steep Manco is specified.

Nabosar Asphalt

- Steep (drums approx. 400 lbs. each).
- Flat (drums approx. 400 lbs. each).
- Slag (drums approx. 400 lbs. each).

MINERAL SURFACED CAP SHEETS

19-in. Selvage Edge

Rolls 36 ins. wide, 36 ft. long. Two rolls required to cover 100 sq. ft. roof area, giving 2-ply construction.

- Colors: Indian Red, Slate Green, Blue-Black.
- Weight: Approx. 115 lbs. per square.
- Underwriters' Special B. U. Label.

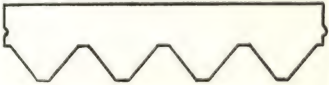
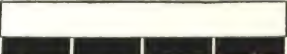
Dur-A-Seal Cap Sheet

Rolls 36 ins. wide, 40 ft. long, containing 120 sq. ft., with 4-in. longitudinal selvage edge on one side and 6-in. transverse selvage edge for endlap for each 8-ft. section. Bottom of sheet is not coated with asphalt. No completing materials.

- Mineral Surfaced*—Approx. wt. 75 lbs. per roll.
- Underwriters' Special B. U. Label.



JOHNS-MANVILLE ASPHALT SHINGLES

Shape	Names and colors <i>Note:</i> All colors not available in all localities. Consult J-M office before selection.	Size, in.	Exposure, in.	Head lap, in.	Strip per sq.	Approx. weight per sq., lb.
	Giant and Standard Dutch Lap Individual Shingles <i>Giant</i> Charmaine Green Standard Blue-black Tile Red Blended Romany Reds Brittany Blend <i>Standard</i> Charmaine Green Standard Blue-black Tile Red	16 x 12	13 x 10	2	112	Giant 162 Standard 135
	Giant Hexagonal Shingles Fieldstone Green Standard Blue-black Tile Red Blended Normandy Greens Blended Romany Reds Brittany Blend Charmaine Green	36 x 12 1/2	4 3/4	3	86	235
	Standard 12 1/3-in. Hexagonal Shingles Tile Red Fieldstone Green Standard Blue-black Blended Normandy Greens Charmaine Green Brittany Blend	36 x 12 1/2	4 3/4	3	86	186
	Standard 11 1/3-in. Hexagonal Shingles Fieldstone Green Standard Red Standard Blue-black Tile Red Blended Normandy Greens Brittany Blend Blended Romany Reds Burgundy Duo-Blend Gascony Duo-Blend Picardy Duo-Blend Charmaine Green	36 x 11 1/2	4 3/4	2	86	167
	Standard 12 1/2-in. Double Coverage Hexagonal Shingles Standard Blue-black Tile Red Brittany Blend Charmaine Green Blended Romany Reds	36 x 12 1/2	4	4 1/2	100	229
	Giant Strip Shingles Fieldstone Green Standard Blue-black Tile Red Blended Romany Reds Blended Normandy Greens Brittany Blend Charmaine Green	36 x 12	5	2	80	257
	Standard Thick Butt Shingles Fieldstone Green Standard Blue-black Tile Red Blended Romany Reds Granada Blend Killarney Greens Charmaine Green	36 x 12	5	2	80	230
	Double Coated Strip Shingles Charmaine Green Standard Blue-black Tile Red Blended Romany Reds Killarney Greens Brittany Blend	36 x 12	5	2	80	210
	Standard Strip Shingles <i>10-in. Width</i> Fieldstone Green Standard Red Standard Blue-black Blended Normandy Greens Brittany Blend Tile Red Blended Romany Reds Charmaine Green <i>12 1/2-in. Width</i> Fieldstone Green Standard Red Standard Blue-black Brittany Blend Tile Red Charmaine Green	36 x 10 36 x 12 1/2	4 4	2 4 1/2	100 100	210 266
	Giant and Standard Individual Shingles Fieldstone Green Standard Blue-black Tile Red *Blended Romany Reds Brittany Blend Charmaine Green †Standard Red *In "Giant" only †In "Standard" only	Giant 12x16 Standard 9x12 3/4	5 4	6 4 3/4	225 378	325 253
	Weatherlok Shingles (Self-locking hexagonal) Charmaine Green Standard Blue-black Tile Red	16 x 16	13 x 13	3	86	135
	Latch Thatch Shingles Charmaine Green Tile Red Standard Blue-black Burgundy Duo-Blend	12 x 18	9 1/2 x 15	2 1/2	102	135
	4-Point Hexagonal Re-siding Shingles Tile Red Charmaine Green Buff Redtone Greentone	36x9	4	1	100	150
	Bric-Side Shingles No. 1—Black Joint Blend No. 1—Cream Joint Blend No. 2—Black Joint Tile Red No. 2—Cream Joint Tile Red No. 3—Cream Joint Blend No. 4—Black Joint Buff No. 5—Brown Joint Blend No. 5—Cream Joint Blend	36 x 7.1	3	1.1	131	Single Dipped 210 Double Dipped 230

MOHAWK ASBESTOS SHINGLES, INC.

TELEPHONE
ASHland 4-5080

GENERAL AND SALES OFFICE
101 Park Avenue, NEW YORK, N. Y.

FACTORY AT ONEIDA, N. Y.
REPRESENTATIVES IN PRINCIPAL CITIES

MOHAWK ASBESTOS SHINGLES

Fireproof—Made of Cement and Asbestos

Mohawk Tapered Asbestos Shingles have won favor with architects for more than twenty years because of their individuality in texture and color. These shingles are fireproof (Underwriters' Class A Label) and are made of natural materials—portland cement, oxide colors and asbestos. They are tapered with thick butts. Because of the exclusive Mohawk method of manufacture, they are the only asbestos shingles that can be said to have real individuality in texture and color. They are practically custom-made shingles, with all the beauty of color and shadow lines previously found only in wood, or heavier materials such as stone, tile, or slate. Yet

because they are lighter than stone or slate, they are much easier to lay and do not require so heavy an understructure.

First cost is the only cost—and is surprisingly low. The cost stops right there. We stand behind every Mohawk roof, and issue a written guarantee of absolute satisfaction.

Designs and Colors—Mohawk Shingles are made in seven different designs and many colors—allowing wide opportunity for individual roof treatments.

Specifications—Complete specifications for all types of Mohawk Shingles furnished on request. Full size samples and photographs of Mohawk houses are also available.



Prospect Presbyterian Church,
Maplewood, N. J.
GRANT & DAHLER, Architects,
New York, N. Y.



Stables, Edwin Burke, Jr. Estate,
Chagrin Falls Valley, Ohio
MEADE AND HAMILTON, Architects,
Cleveland, Ohio



Mohawkstone

Square and Rough Butts

At the right is shown how the two simplest types of Mohawk Shingles—Square Butts and Rough Butts—may be combined to give the effect of rugged texture and heavy shadow lines. Either type may be used separately throughout the entire roof. Tapered, with thick butts.

Colors—Black, Brown, Purple, Acme Red, Buff, Dark Gray, Light Gray. Soft shades can be intermixed at random without sharp contrast. Special colors furnished on request.

Size and Weight—Square and Rough Butts, 8x16 in., 260 shingles per square, laid 7 in. to weather. Thickness at butt $\frac{3}{8}$ to $\frac{1}{2}$ in. Weight, loose, per square, 720 lbs.



Square and Rough Butts

Rustic Type

The Rustic Type of Mohawk Shingles, shown at the right, is another individual design. This design is textured differently from Mohawk Rough Butts and should not be used in mixture with any other type. Tapered, with thick butts.

Colors—Same as Square and Rough Butts.

Size and Weight—Same as Square and Rough Butts.

Adaptability—Mohawk Square Butts, Rough Butts and Rustic Type may be used with Colonial, Georgian, English, French, modern English, early American architecture, etc.



Rustic Type

Mohawkstone and Stonnetexture

Mohawkstone (left) is specially textured and colored in soft tints to duplicate the effect of Cotswold, Eyford and Yorkshire split-stone roofs. Thickness and color-tints are intermixed at random. Stonnetexture is produced in the same hand-moulded texture, but in deeper colors. Tapered with thick butts.

Colors—Mohawkstone is produced in a special mixture of Graystone, Bluestone, Brownstone, Buffstone, and Redstone, blended throughout the roof. Stonnetexture: choice of Dark Gray, Purple, Buff, Brown, Black, Acme Red.

Size and Weight—Mohawkstone: Sold only in mixture $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$ and 1 in. Weight, 900 lbs. per square.

Stonnetexture: 16 in. long, random widths of 6, 8, 10 and 16 in. Thickness at butt, $\frac{3}{8}$ to 1 in. Weight, 760 to 1440 lbs. per square.

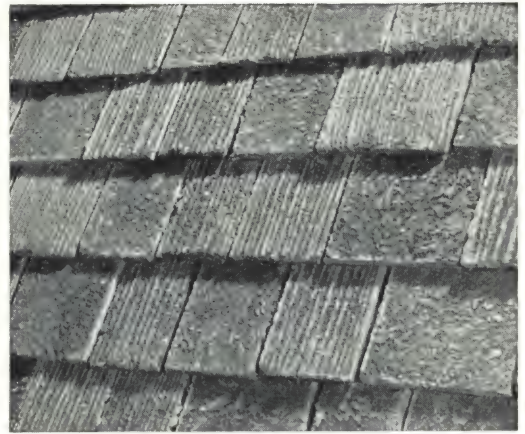
Williamsburg Type

The Williamsburg Type of Mohawk Shingle (*right*) is a perfect fireproof reproduction of weathered Colonial hand-hewn shingles. It was designed at the request of architects Perry, Shaw & Hepburn for John D. Rockefeller, Jr.'s restoration of Williamsburg, Virginia. It has also been used on Henry Ford's Edison Museum at Dearborn, Michigan, designed by Robert O. Derrick, architect, of Detroit; on the home, recently restored at Fredericksburg, Virginia, of Mary Washington, the mother of George Washington; and on other restoration projects including the York Hall at Yorktown, Pa., and the famous Pohick Church in which George Washington worshipped.

Williamsburg Shingles are hand-textured to represent both vertical and cross-grained types. They are tapered with thick butts.

Colors—Made in a special brown-black. Special colors on demand only.

Size and Weight—16 in. long, random widths 5, 6 and 8 in. Thickness at butt, $\frac{3}{8}$ to $\frac{1}{2}$ in. Special widths and thicknesses furnished on request. Weight, loose, approximately 720 lbs. per square.

**Williamsburg Type****Raleigh Tavern, Williamsburg, Va.***Below:***Stettinius Residence****Home of Mary Washington, Mother of George, Fredericksburg, Va.****Plymouth Type****Plymouth Type**

The Plymouth Type of Mohawk Shingle (*left*) is a less expensive development in the reproduction of weathered wood shingles. Plymouth Type Shingles are hand-textured and tapered, but are more uniform in texture than the Williamsburg Type. Furnished in vertical grain only. Yet each Plymouth Type Shingle is individually textured so that no two shingles are exactly alike.

Colors—Plymouth Type Shingles are made in special brown-gray color only.

Size and Weight—16 in. long, random widths of 6, 8 and 10 in. Thickness at butt, $\frac{3}{8}$ in. only. Weight loose, 680 lbs. per square.

Adaptability—Both Williamsburg and Plymouth Type Shingles are especially adapted to Colonial, Georgian, and modern types of architecture.

MOHAWK FLOORING AND FLAGGING

Produced in the same colors as Mohawk Shingles for interior and exterior floors, entrances, terraces and walks, in solid colors tones heretofore available only in natural stone. The stone-like texture prevents slipping and, if desired, the completed floor can be rubbed to a smooth, marble-like surface, thereby increasing the depth of color. Furnished in squares and rectangles making it possible to work out definite schemes and designs.

The material can be nailed directly to a wood floor, the joints filled with cement and the nail heads covered. Exterior floors are laid on a concrete or a well-tamped soil or cinder base.

Furnished with square edges, in $\frac{1}{2}$, $\frac{3}{4}$ and 1-in. thicknesses, and in the following sizes: 16x16 in., 8x16 in., and 8x8 in.

**Huyler's Candy Store, Chicago, Ill.***Mohawk Flooring in Varied Colors*

BAKER AND CROMWELL, New York, N. Y., Architects

THE RUBEROID CO.

EXECUTIVE OFFICES: 500 Fifth Ave., NEW YORK, N. Y.

Eternit Asbestos-Cement Shingles for Roofs and Sidewalls

CONTINENTAL	RUBEROID	DIVISIONS ETERNIT	SAFEPACK	H. F. WATSON
NEW YORK	CHICAGO	DIVISIONAL OFFICES BOSTON (MILLIS)	ERIE	BALTIMORE
				MOBILE

PRODUCTS

ASBESTOS-CEMENT SHINGLES:
 Gothic American Method Tapered (Rough Textured).
 Timbertex American Method Tapered (Wood Grain Texture).
 Dutch Lap Timbertex (Wood Grain Texture).
 Hexagonal (Smooth Finish).
ASBESTOS INSULATING PRODUCTS, see File Index.

ASBESTOS-CEMENT SIDINGS:
 Brick-Type.
 Colonial Timbertex.
 Thatched Timbertex.
 Wide-Space Timbertex.
ASBESTOS "NEWMARBLE" and **"NEWTILE,"** see File Index.
ASBESTOS WALL PANELS, see File Index.

ETERNIT ASBESTOS-CEMENT SHINGLES

No expense has been spared to build into Eternit Asbestos-Cement Shingles and Sidings the qualities that win your admiration and confidence. Time, rot-proof and fire-defying Portland cement and asbestos fibres are combined by an ingenious building up process which insures an even distribution of the reinforcing fibres, resulting in remarkable shingle strength and resiliency.

Eternit Asbestos Shingles and Sidings are made in a wide variety of styles, textures and colors to meet every architectural need or pocketbook. The colors are pure mineral oxides and are an integral part of each shingle. All are fireproof and bear the Underwriters' Laboratories, Inc., label. Not a single detail has been overlooked to make Eternit products without a peer in the field of roofing and siding materials.

ETERNIT GOTHICS

The Gothic has age-old architectural charm in its rugged rock-like texture and soft, mellow colors. The texture is like that of natural rock in which has been carved by years of exposure to the elements fascinating designs such as only nature itself can produce. The luxurious appearance is duplicated only in the most expensive types of natural slate or stone.

Tapered with a heavy butt, the Gothic shingle lays perfectly on the roof and has shadow lines which give the effect of massiveness without the burden of extra weight in the shingle itself which would necessitate an expensive supporting structure.

Furnished in random widths and designed so that it can be applied with staggered butts, the Gothic offers unusual opportunities for individuality in roof design both from the standpoint of roof lines and color blending.

Specifications

Full size shingles—12 ins. wide by 16 ins. high. Random widths—5, 6 and 7 ins. Tapered with approximately $\frac{5}{16}$ -in. butts. Applied with 7-in. exposure; spaced $\frac{1}{8}$ in.

apart. 171 shingles per square, approximate weight 525 lbs. Packed 9 bundles containing 19 shingles each. Use 6-in. width shingles in Boston Hip method for finishing hips and ridges.

Completing materials, 2 lbs. 1½ in. Galv. Needle Point Nails.



A Close-up of Eternit Gothics
 Note the rugged rock-like texture

ETERNIT TIMBERTEX ASBESTOS-CEMENT SHINGLES

American Method

If you are partial to the texture of "weathered cypress" you can now obtain this beautiful finish in an asbestos shingle—Eternit Timbertex—in either "American Method" or "Dutch Lap" styles.

This fire-proof, rot-proof, time-defying shingle of tapered construction, with butts approximately $\frac{1}{4}$ in. thick, is designed to provide thickness and strength where it is most required and is shaped for perfect application.

Its several "wood colors" are soft and rich. Periodic



Eternit Tapered Timbertex—American Method

painting or staining is not required as the colors are an integral part of each shingle.

Double sets of punched nail holes permit the laying of irregular shingle courses, providing interesting roof lines. Ideal for new construction, or may be applied with 2-in. nails right over old wood shingles.

Specifications

Full size shingle—8 ins. wide by 16 ins. high. Tapered with approximately $\frac{1}{4}$ -in. thick butts. Shingles may be staggered. Applied with 7-in. exposure, spaced $\frac{1}{8}$ in. apart. 260 shingles per square, approximate weight 525 lbs. Packed 10 bundles, containing 26 shingles each. Completing materials required: $2\frac{1}{2}$ lbs. $1\frac{1}{2}$ -in. galvanized N. P. nails. (Use 2-in. long nails for applying over old shingles).



Close-up of Eternit Timbertex

Note the four pre-punched holes for staggered application

DUTCH LAP TIMBERTEX ASBESTOS-CEMENT SHINGLES

In Eternit Dutch Laps you have the same "weathered cypress" texture and roof lines similar to the "American Method" shingle. This ingenious design, however, effects great economy in the cost of the finished roof.

The method of application follows the principle of having both a headlap and sidelap for protection and is one that has been employed for many years in the application of certain types of roofing material and has been proven entirely satisfactory.

For small homes, where massiveness is not paramount, or for re-roofing, this shingle lends itself admirably. It is far less expensive than the American Method Timbertex Shingle, yet has the same beautiful texture, and pleasing design.

Specifications

Full size shingle—16 ins. wide by 16 ins. high. $\frac{5}{8}$ in. thick. Headlap protection 3 ins. Sidelap 4 ins. Exposure 13 ins. by 12 ins. 92 shingles per square, approximate weight 280 lbs. Packed 4 bundles, containing 23



Eternit Timbertex—Dutch Laps

shingles each. Completing materials required: $\frac{1}{2}$ lb. Copper Storm Anchors, $\frac{4}{5}$ lb. $1\frac{1}{4}$ -in. galvanized N. P. nails. (Use $1\frac{1}{2}$ -in. galvanized nails for applying over old shingles.)

ETERNIT ASBESTOS-CEMENT SIDINGS

Eternit offers Timbertex Sidings in Colonial, Thatched, and Wide-Space styles, in five colors, to eliminate paint bills and provide additional fireproof protection. Colonial Timbertex Siding has a "weathered cypress" texture with an irregular butt line, while

Thatched Timbertex gives the effect of staggered butts; Timbertex Wide-Space Siding provides the effect of overlapping wood shingles. Descriptive literature of any Eternit Asbestos-Cement Siding will be gladly forwarded upon request.

COLONIAL TIMBERTEX SIDING

Eternit Colonial Timbertex Asbestos-Cement Siding is equally efficient for new construction or re-siding old buildings. Its texture exactly reproduces the graining of natural weather-aged cypress. Each strip is made of Portland cement and long asbestos fibres, providing a rot-proof, fire-proof, time-defying siding.

The attractive "wood colors" are an integral part of each piece of siding so that its beauty endures without the necessity of periodic painting or staining.

On new construction, Colonial Timbertex Siding is applied right over the board sheathing or insulation. When applied over clapboard, stucco, or brick, Colonial Timbertex Siding affords increased insulation. This is made possible by the dead air space between the old siding and the new. Fuel savings upward of 20% have been reported.

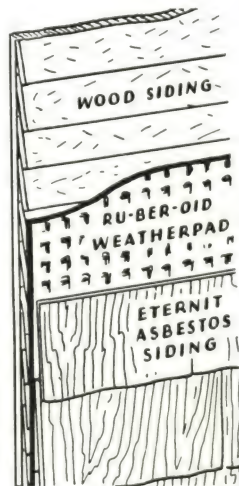
The beauty of this siding, reproducing the charm of cypress, its economy of application, and the savings in upkeep, have made it one of the most popular sidewall products.

Specifications

Size 12 ins. by 24 ins. by $\frac{5}{8}$ in. thick. Exposure $10\frac{1}{2}$ ins. by 24 ins. Weight approximately 195 lbs. per square of 57 shingles. (Packed 3 bundles per square of 19 shingles each.) Completing materials 1 lb. $1\frac{1}{2}$ -in. galvanized nails for concealed nailing. The 57 Asphalt Roofing Joint Strips are furnished free.

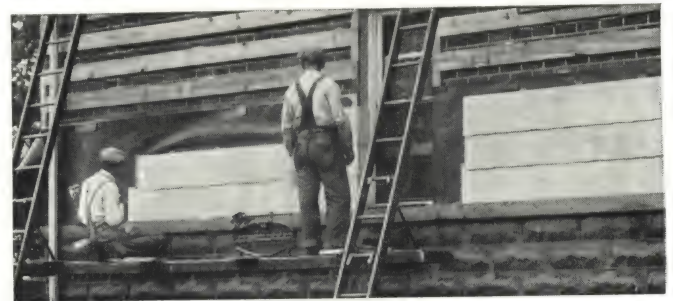


Eternit Colonial Timbertex Siding



Ruberoid Weatherpad

An indented, heavy rag-felt, asphalt-coated on one side. This companion Ruberoid product is recommended under asbestos siding. It affords excellent insulation and is both waterproof and vermin-proof.



Application of Colonial Timbertex Siding Over Brick
Note furring strips. This method is also used over stucco



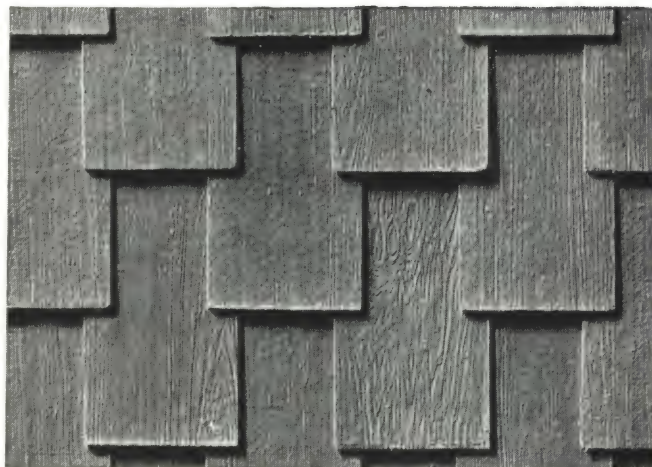
The Usual Method of Applying Colonial Timbertex Siding Over Clapboard
Note the filler strips for even application

TIMBERTEX WIDE SPACE SIDING

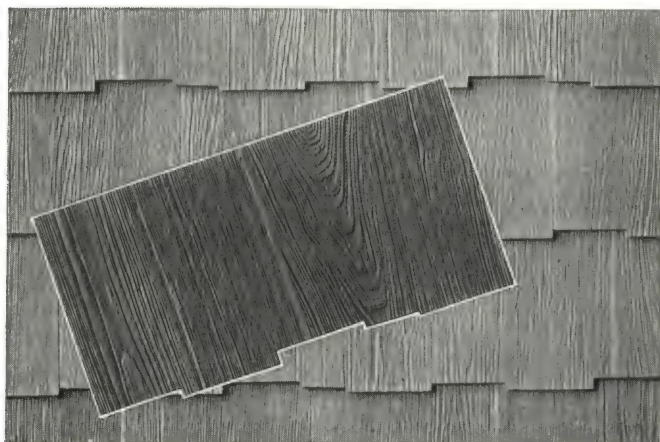
Timbertex Wide Space Siding has all the beauty of Colonial Siding, but is designed to accomplish coverage with a minimum amount of labor and material. The unique design produces pleasing vertical lines and deep shadow effects. This siding is also fire-proof, rot-proof and eliminates the need for periodic painting. May be obtained in several pleasing "wood" colors.

Specifications

Size 8 ins. by 16 ins. by $\frac{5}{8}$ in. thick. Headlap 2 ins. Sidelaps $1\frac{1}{2}$ ins. Exposure at butt 7 ins. by 8 ins. Exposure at top 7 ins. by 5 ins. 160 shingles per square. Weight approximately 245 lbs. Packed 5 bundles of 32 shingles each.



Close-up of Timbertex Wide Space Siding

THATCHED TIMBERTEX SIDING

Note the irregular butts which give a thatched effect

The call for side walls giving a thatched effect led to the introduction of Eternit Thatched Timbertex Siding, one of today's most popular sidings for Colonial architecture. Its irregular butts lend emphasis to the texture of aged, mellowed wood. Its stonelike hardness assures low maintenance costs, for this siding is time-defying, rot-proof and fireproof. There is no need for periodic painting as the colors are an integral part of each siding shingle.

Specifications

Size 12 ins. by 24 ins. by $\frac{5}{8}$ in. thick. Headlap minimum $1\frac{1}{4}$ ins., maximum 2 ins. Exposure 10 ins. by 24 ins. Weight approximately 205 lbs. per square of 60 shingles. Packed 3 bundles of 20 shingles each. Completing materials: 1 lb. $1\frac{1}{2}$ -in. galvanized nails for concealed nailing. 60 Asphalt Roofing Joint Strips are furnished free.

ETERNIT BRICK-TYPE SIDING

Asbestos-Cement Brick-type Siding is a rigid three-in-one strip designed for use on side walls. It gives the appearance, and many of the advantages, of brick veneer at low cost. It is equally adaptable for new construction or for application over old side walls.

The "rough" brick texture with each individual "brick" set out from the recessed mortar joints gives a remarkable reproduction of a brick side wall. Special corner pieces mitred to a perfect fit, and soldier courses for use at the base and over windows, plus the stony hardness of the material, enhance the perfect brick-like appearance.

Age-enduring cement and fireproof asbestos guarantee weather protection, reduce fire hazards, eliminate frequent paintings, increase comfort through insulation, and lower fuel costs.

Asbestos-Cement Brick-type Siding may be had in both Redtone and Buff, the most popular brick colors.

**Eternit Asbestos Brick-type Siding**

Rigid strips 6x30 ins. contain 3 bricks, $2\frac{1}{2}$ x9 $\frac{1}{2}$ ins. Exposure, 3 ins. by 30 ins. with $\frac{1}{2}$ -in. mortar line

KEASBEY & MATTISON COMPANY

AMBLER, PA.

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For K&M Decorative Wall Finishes, Asbestos Lumbers, Sidewall and Ceiling Erection System, see File Index

KEASBEY & MATTISON COMPANY is one of the oldest and largest manufacturers of asbestos products. Asbestos Shingles were introduced by this company in 1905, and have been one of its leading products since that time.

Ambler "Century" Asbestos Shingles are manufactured from selected asbestos fibre, from our own mines, scientifically combined with Portland cement. They are subjected in the forming process to tremendous



hydraulic pressure. They are fire-resisting and weather-resisting.

Textures have been developed which give the architect a range of effects that portray faithfully the architectural periods of the past, as well as the most modern styles.

On this and the two following pages will be found illustrations and data covering Ambler "Century" Asbestos Roofing and Siding Shingles.

AMBLER "YORKTOWN" ASBESTOS SHINGLES



Residence of Dr. Franklin S. Gillespie, Swarthmore, Pa.

RICHARD W. MACASKEY, Architect, Philadelphia, Pa.

GEO. GILLESPIE & Co., Builder, Swarthmore, Pa.

The well-designed American Farm Type Colonial home illustrated above has a roof of No. 39 "Yorktown" Asbestos Shingles. The texture of this American

Method Shingle is a combination of vertical lines and rough surface. It is available in random widths. In the roof shown above, two vertical-lined shingles to one rough-textured shingle, were used. Color of the tapered shingle is a pleasing gray-black.

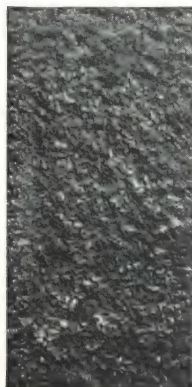
Note that in roof on the house above an effect of soft shadows and mellow age results from the rough, deep-lined texture and thick butts of the No. 39 "Yorktown."

The No. 39 "Yorktown" Asbestos Shingle is a replica of the hand-hewn

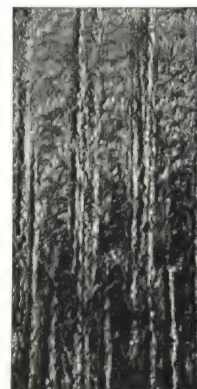
wood shingle that added a crown of picturesque charm to the homes of Colonial times.

Description—The No. 39 "Yorktown" Tapered Shingle is 18 in. long and is furnished in standard widths in the following proportion: one each of approximately 5, 6 and 7 in. to two of 9-in. width. Standard color is black overtone on gray background. Special colors are available on order. Exposure to the weather is 8 in. Headlap is 2 in. $\frac{3}{8}$ in. full at butt. Available in square or rough butts. Weight per square is (approximately) 600 lbs. 250 shingles per square.

For method of application, write nearest K&M district office.



Gray-black
Rough Texture



Gray-black
Vertical Texture

AMBLER "ENGLISH THATCH" ASBESTOS SHINGLES



"Red Roof," the residence of Mrs. George Gilpin, Jr., at Narberth, Pa.

The residence illustrated above has a roof of No. 29 "English Thatch" Asbestos Shingles, the color of which is Tuscan Red. The "English Thatch" Asbestos Shingle meets a definite need for a rough-textured asbestos shingle in a wide range of colors, available in random widths. The range of six colors and the two butt thicknesses (furnished in $\frac{5}{8}$ -in. butt in No. 37 "English Thatch" Shingle) make this shingle adaptable to numerous styles of architecture and to varying personal preferences.

The artistic value of the light and shadow effects thrown off by the rough texture and thick, rough butts of No. 29 "English Thatch" Shingle recommends it for homes of distinction. In particular, the thick, jagged-line butts emphasize the roof pattern and lend a rugged character to the appearance of the roof itself. Also, this shingle blends extraordinarily well, in any one of the

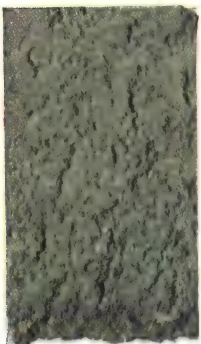
six soft colors in which it is available, with the landscape surrounding spacious residences of the type illustrated above.

Description—The No. 29 "English Thatch" Tapered Shingle is approximately 9x18 in. Made also in random widths of 6, 12 and 18 in. Colors available are Colony Gray, Smoke Black, Oak Brown, Heather Purple, Tuscan Red and Nile Green. Exposure to the weather is 8 in. Headlap is 2 in. $\frac{3}{8}$ in. full at butt. Rough butts standard. Weight per square is (approximately) 550 lbs. 200—9x18-in. shingles per square.

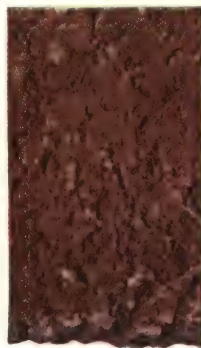
"English Thatch" Shingle is available also in $\frac{5}{8}$ in. thickness at butt, designated as "No. 37." Weight per square is approximately 900 lbs. Same as No. 29 in all other specifications.

For method of application, write the nearest K&M district office (see list on opposite page).

These Five Color Panels Illustrate Five of the Six Colors Available in Nos. 29 and 37 "English Thatch" Shingles



Nile Green



Tuscan Red



Oak Brown



Heather Purple



Smoke Black

AMBLER "CENTURY" ASBESTOS ROOFING AND SIDING SHINGLES



At left:

No. 57 Broad siding, Uniform Thick—Weathered Effect

A low cost siding shingle with real architectural appeal. Its deep, cypress graining and wavy butt line result in a pleasing appearance.

Description No. 57 Broad siding (Weathered Effect).

12x24 in. by $\frac{5}{8}$ in.

Color: Newport Gray.

57 per square.

Approximate weight, 184 lbs. per square.



At right:

No. 92 American Method, Tapered—Weathered Effect

Thick butts, slightly irregular edges, heavy shadow lines and deep, rich vertical texture, characterize this American Method shingle. It is unique in that the texture of no two shingles is exactly alike. Color of shingles shown at right is "Lindenwold."

Description No. 92 American Method, Tapered (Weathered Effect).

9x18 ins. by $\frac{1}{4}$ -in. butt



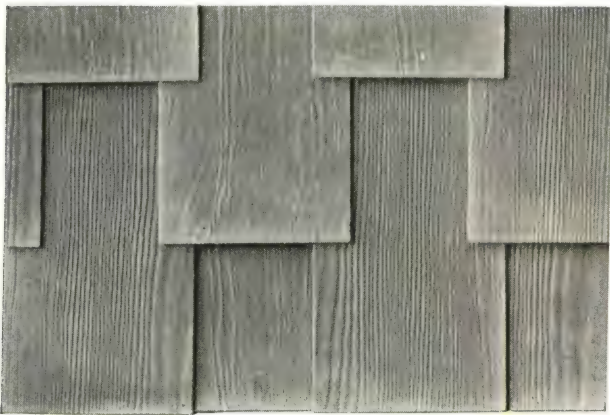
Colors: Royal Red, Lindenwold, Olive Green and Oxford Black.

200 per square.

Approximate weight, 540 lbs. per square.

Exposure, 8 in.

Random widths available.



At left:

No. 16-V Wide Space Siding, Uniform Thick—Weathered Effect

"Wide Space" method of application conserves material. Economical, effective method of covering exterior walls. For siding only. Use of space fillers optional—they may be the same color, blending color, or contrasting color.

Description No. 16-V Wide Space (Weathered Effect).

8x16 in. by $\frac{5}{8}$ in.

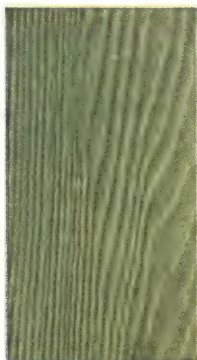
Colors: Pearl Gray, Newport Gray, Spanish Red, Autumn Brown, Black and Surf Green.

160 per square.

Approximate weight, 256 lbs. per square.



Colors in which roofing shingles and siding shingles are available, as indicated in descriptions of respective shingles.



Surf Green



Spanish Red



Autumn Brown



Pearl Gray



Black

CERTAIN-TEED PRODUCTS CORPORATION

ROOFING DIVISION

Manufacturers of Asphalt Shingles, Sidings, Roll Roofing, Felts, Building Papers, Asphalt Coatings and Roofing Products for Built-up Roofing

GENERAL OFFICES

100 East 42nd Street, NEW YORK, N. Y.

For Sales Offices, see Gypsum Plaster pages

For Our Other Products, see File Index

CERTAIN-TEED AND VULCANITE SHINGLES

"Millerized" for Longer Life

Approved by the Fire Underwriters, Inc.

Certain-teed and Vulcanite shingles include every type of asphalt shingle in demand today, from the original and stabilized type of Individual Shingle to our most recent and remarkable roofing development—Wave Line "Seal-Tab" Shingles.

The quality of all Certain-teed and Vulcanite shingles is well established. These shingles, moreover, introduce a variety of rich colors and fascinating blends, and an extensive range of design



TRADE-MARKS

that meets every modern architectural requirement. These shingles have been designed with regard to the utmost in protection, beauty, permanency, and fire resistance. They are equally suitable for new re-roofing or construction work.

Certain-teed and Vulcanite shingles are known for their extra protection and their lasting service. They bring security, beauty, and charm wherever used. The shingles illustrated here represent roof styles to fit most any home in design, color, and economy.

Certain-teed Presents a Most Distinguished Line of Shingles

To meet today's demand for colorful roofs, Certain-teed re-colored its entire line of asphalt shingles.

A roof has always commanded man's respect. This is because it has always been a symbol of protection. But now, with the passing of a "drab decade," a roof must offer something more than protection. It has been lifted out of its dinginess and become part of the decorative scheme of the home. There has been a rapidly growing tendency in modern home building toward individual architecture, toward more individual design and color throughout the home. Even the lowly kitchen utensils, bathroom fixtures, stoves, awnings, and rugs have blossomed out and joined this gay array of color.

And so, almost overnight, the asphalt roofing industry

has shed its cloak of dull necessity, stepping into the glow of actual beauty and charm.

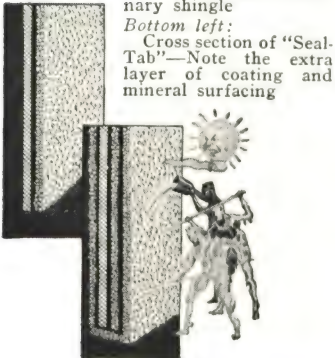
Certain-teed and Vulcanite roofs beautify as well as protect. The roofing manufacturer is a colorist and stylist. He uses the rainbow for his palette and selects his shades from nature's unfading materials—some subdued and subtle, others gayer. In the manufacture of Certain-teed and Vulcanite shingles, we have chosen cool blues, warm glowing reds, and have woven them into a tapestry that glorifies the roof and raises it from its humble state into an object of art and beauty. Now we find that truly, beauty is added to protection in this modern flair of color found in Certain-teed and Vulcanite asphalt shingles.

WAVE LINE "SEAL-TAB" SHINGLES AND THREE-TAB "SEAL-TAB" SHINGLES

These shingles are sealed where the wear comes. Preservation is the first law of roofing. In the manufacture of these shingles, under either the Certain-teed or Vulcanite label, an extra layer of coating and mineral surfacing is used to seal in the life-giving asphalt. This process builds up the butt line and preserves the shingle intact against the assaults of the elements.

These shingles are sealed on all sides—a feature that adds greatly to the protective quality of these products.

Top left:
Cross section of ordinary shingle
Bottom left:
Cross section of "Seal-Tab"—Note the extra layer of coating and mineral surfacing



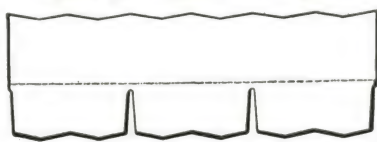
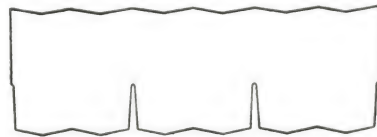
Top right:
Notice open edge of ordinary shingle
Bottom right:
Notice sealed edge of "Seal-Tab" Shingle—it seals the weather out—seals the asphalt in



For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED AND VULCANITE SHINGLES

"Millerized" for Longer Life

	SPECIFICATIONS					
	Head Lap, in.	Exposure, in.	Slabs in One Square	Bdls. in One Square	Approx. Weight per Sq.	COLORS
Wave Line "Seal-Tab" Shingles  Standard Weight Size, 11x36 in. Carries Fire Underwriters' Label	3	4	100	4	250	Brick Red Lawn Green Blue Black Bright Red Blend Brown Red Blend Green Blend Bright Green Blend Gray Green Blend Purple Slate Blend
Three-Tab "Seal-Tab" Shingles  Standard Weight Size, 12x36 in. Carries Fire Underwriters' Label	2	5	80	3	230	Brick Red Lawn Green Blue Black Bright Red Blend Brown Red Blend Green Blend Bright Green Blend Gray Green Blend Purple Slate Blend
Speedlay Shingles  Standard Weight Size, 12½x40 in. Carries Fire Underwriters' Label (Also available in Jumbo Weight, 274 lbs. per square)	2½	5	72	2	215	Red Cast Green Cast Emerald Cast Red Brick Red Green Lawn Green Blue Black
Wave Line Shingles  Standard Weight Size, 11x36 in. Carries Fire Underwriters' Label	3	4	100	3	236	Red Blend Green Blend Gray Blend
Three-Tab Jumbo Shingles  Jumbo Weight Size, 12x36 in. Carries Fire Underwriters' Label	2	5	80	3	257	Red Brick Red Green Lawn Green Blue Black Red Blend Green Blend Gray Blend

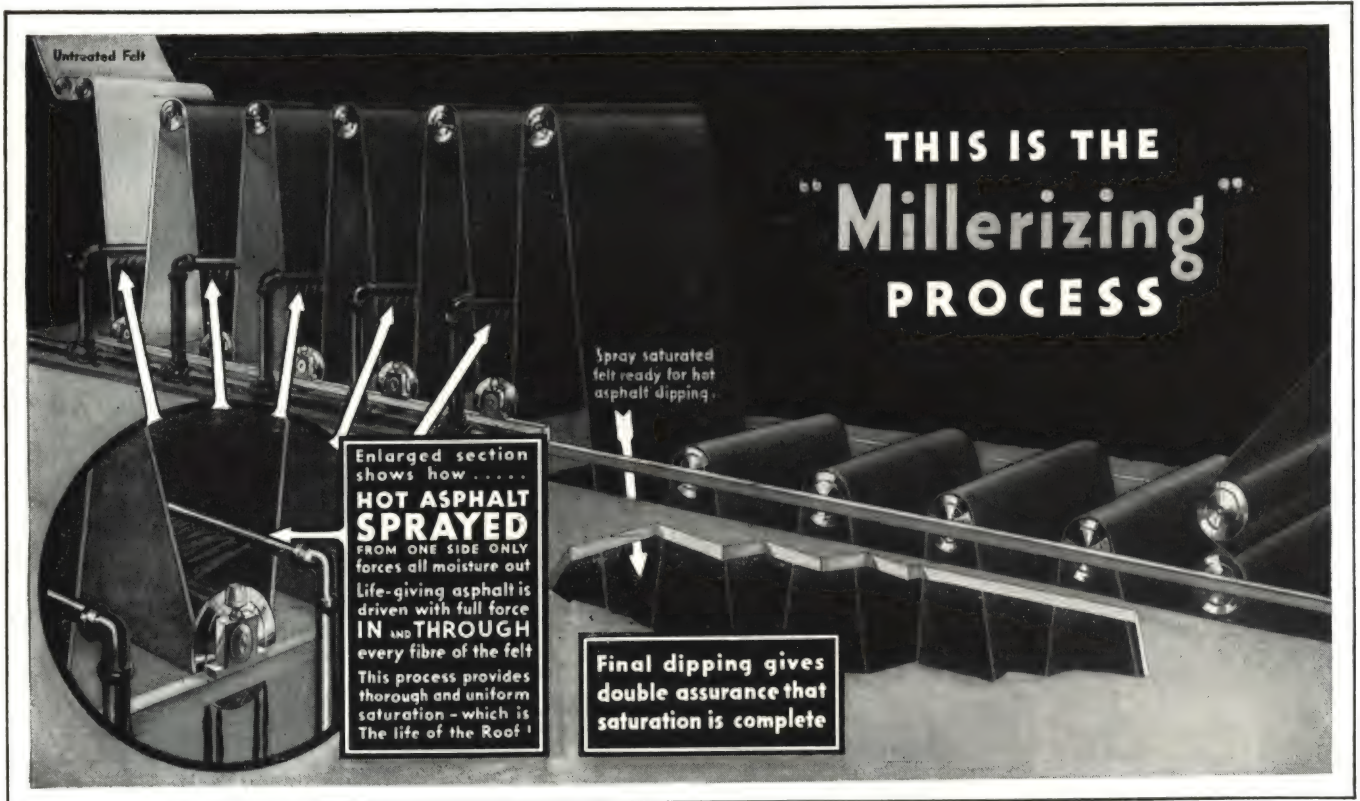
For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED AND VULCANITE SHINGLES (Continued)*"Millerized" for Longer Life*

	SPECIFICATIONS					
	Head Lap, in.	Exposure, in.	Slabs in One Square	Bdls. in One Square	Approx. Weight per Sq.	COLORS
Cut-Out Shingles  Standard Weight Size, 10x36 in. Carries Fire Underwriters' Label (Also available in size 12½x36 in.)	2	4	100	2	210	Red Brick Red Green Lawn Green Blue Black Color Blend Red Blend Green Blend Gray Blend
Self-Spacing Individual Shingles  Jumbo Weight Size, 12½x16 in. Carries Fire Underwriters' Label	6	5	236	4	337	Red Brick Red Green Lawn Green Blue Black Red Blend Green Blend Gray Blend Color Blend
Standard Hexagonal Shingles  Standard Weight Size, 11½x36 in. Carries Fire Underwriters' Label	2	4¾	86	2	167	Red Brick Red Green Lawn Green Blue Black Color Blend Warm Blend Cool Blend Gray Blend
Hexagonal Slab Shingles  Standard Weight Size, 12½x36 in. (Also available in Jumbo Weight, 235 lbs. per square) Carries Fire Underwriters' Label	3	4¾	86	2	186	Red Brick Red Green Lawn Green Blue Black Color Blend Warm Blend Cool Blend Gray Blend
Double Coverage Hexagonal Shingles  Standard Weight Size, 11½x36 in. (Also available in Jumbo Weight, 279 lbs. per square) Carries Fire Underwriters' Label	4⅞	3¾	102	2	220	Red Brick Red Green Lawn Green Blue Black Color Blend Warm Blend Cool Blend Gray Blend

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED AND VULCANITE ROOFING AND SHINGLES ARE "MILLERIZED" FOR LONGER LIFE



A MOST IMPORTANT DEVELOPMENT IN ASPHALT ROOFING

Asphalt is recognized as the life-blood of all asphalt roll roofings and shingles.

The more thoroughly and uniformly you can saturate a piece of asphalt roofing with asphalt—to place in the felt every drop of asphalt possible for the felt to contain—and make it stay there—the longer life you put in the roofing. "Millerizing" does this as no other process—does it effectively by the process of Super-Spray Saturation, protected by Patent No. 1636750.

How this is accomplished is shown in the illustration above. The hot asphalt sprayed from one side of the felt only, drives through the felt, forcing air and mois-

ture out on the other side—forcing asphalt *in* and *through* every fibre of the felt. This provides roofing felt, the best of all asphalt roofing, with a reservoir of life-giving asphalt which resists the attacks of weather and time which results in longer life.

There is only one way to be sure to obtain this extra measure of protection and that is to specify only asphalt roll roofings and asphalt shingles protected by the exclusive "Millerizing" process and guaranteed by the "Millerized" label.

This label appears on all packages of Certain-teed and Vulcanite roll roofing and asphalt shingles.



For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED ROLL ROOFINGS, FELTS, BUILDING PAPERS AND ASPHALT COATINGS

A Complete Line

Super Certain-teed Smooth and Mineral Surfaced Roll Roofings.

Certain-teed Smooth and Mineral Surfaced Roll Roofings.

Certain-teed Asphalt Felts and Deadening Felts.



TRADE-MARK

Certain-teed Asphalt Roof Coating.
Certain-teed Insulating and Sheathing Papers.

Certain-teed Plastic Cement.
Certain-teed Asbestos Roof Coating.

Certain-teed Roofing Products

No effort is spared to safeguard the high quality of Certain-teed Roofing products. Careful selection of the best raw materials, rigid supervision during manufacture, and the most advanced methods of production have resulted in the widespread use of Certain-teed Roofings wherever superior quality is required.

Certain-teed Roll Roofings and allied products cover the entire range of roofing requirements. These roofs succeed wherever they are used, because each product is adapted to certain conditions, and there is a Certain-teed Roof for every type of building—from the most important structures to temporary shelters.

For complete specifications and information regarding Certain-teed Built-up Roof construction, see Manufacturers' Index for pages.

Distribution

Certain-teed products are handled by jobbers and dealers throughout the United States and also in principal countries throughout the world.

Super Certain-teed Roll Roofings

This roll roofing available with either a smooth surface or a mineral surface is specially manufactured to provide the finest shelter. Super Certain-teed Roofing represents the latest development in the manufacture of roll roofing products.

This type of roofing is recommended wherever the maximum of protection is required. It is especially suited for roofing industrial buildings, hotels and farm buildings. Super Certain-teed Roll Roofing carries a guarantee minimum of 15 years.

There are definite reasons why Super Certain-teed Roll Roofings are of superior quality. For example, in the matter of surfacing a process has been developed whereby the special micaceous material used for the surfacing is subject to great pressure so that this material is pressed deep into and mixed with the coating.

An examination of the surfacing of Super Certain-teed Smooth Surfaced Roofing will disclose that the micaceous granules are exceptionally well distributed over the entire material. This process gives additional strength and wearing quality to this roofing.

This process gives the same comparisons between Super Certain-teed Roofing and ordinary roofing as between cast and forged metal or poured and tamped concrete.

From the felt base clear through to the surfacing, the ingredients going into Super Certain-teed Smooth or Mineral Surfaced Roofing represent the most careful selection of available high grade materials.

Super Certain-teed Mineral Surfaced Roofing has a 3-in. selvedge edge, which assures water-tight joints. The mineral surfacing is highly resistant to fire. The colors of Super Certain-teed Mineral Surface Roofing are permanent and will not fade or wash out.

Certain-teed Smooth Surfaced Roll Roofings

Certain-teed Smooth Surfaced Roofing is recommended for use where the high quality roofing and the most satisfactory service are required. In every corner of the world, this sturdy roofing has weathered many climes and withstood the ravages of passing seasons.

It is the uniform and dependable quality of this product that has won the friendship of leading architects and contractors in many countries. Exceptional durability and lasting protection have built up a world-wide reputation that only a superior product might enjoy.

Certain-teed Smooth Surfaced Roofing is put up in rolls of 108 sq. ft., with nails and cement enclosed. It is packed one square per roll—enough to cover 100 sq. ft. of roof surface with 8 sq. ft. for laps.

No. 1, light, about 35 lb. per square, guaranteed 5 years.

No. 2, medium, about 45 lb. per square, guaranteed 10 years.

No. 3, heavy, about 55 lb. per square, guaranteed 15 years.

No. 4, extra heavy, about 65 lb. per square, guaranteed 15 years.

Certain-teed Mineral Surfaced Roll Roofing

A high grade of asphalt roofing, surfaced with colorful mineral granules in their natural hues. This surface provides additional protection against weathering, and is highly fire-resistant. The colors, moreover, are in line with modern roofing requirements, and require no staining or painting at any time. Suitable for use where a decorative roof is required at minimum cost. Guaranteed ten years.

Put up in rolls of 108 sq. ft.; weight 90 lbs.

Certain-teed Insulating Paper

A high grade, black insulating paper, used for general sheathing and lining purposes. Saturated and coated with asphalt to insure greater durability and the highest waterproofing qualities. This product is entirely odorless and does not affect food flavors in any way. Widely used in constructing refrigerators, icehouses, dairies, etc., and for lining shipping cases. In sheathing homes it saves fuel in winter and keeps out summer heat during the warm seasons. Frequently laid between subfloors for insulation.

Furnished 36 in. wide in rolls containing approximately 500 sq. ft. Made in two weights: Medium, about 35 lb. per roll; Heavy, about 50 lb. per roll.

Certain-teed Asphalt Roof Coating

Resaturates and preserves the life of smooth surfaced roofing. Applied every three or four years it will preserve a roof indefinitely. Also used for protecting metal surfaces of all kinds, as a preservative for rough timber work, and for waterproofing stone and concrete foundations. Certain-teed Roof Coating is strongly adhesive and elastic, and does not crack nor peel off. It will give long and satisfactory service.

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED BUILT-UP ROOFS

*"Millerized" for Longer Life***Advantages of Certain-teed Built-Up Roofs**

They can be used on roof decks ranging from flat to vertical surfaces, and are particularly well adapted to sawtooth skylights and valley construction.

**Maintenance**

Certain-teed Built-Up Roofs are practically free of maintenance costs. The cost per year of service is comparatively low. Certain-teed Built-Up Roofs provide trouble-free protection for many years. In the greatest test of all—actual use—they are daily proving this point.

A CORRECT TYPE OF ROOF FOR EACH ROOF CONDITION

Through long years of experience Certain-teed has found that no one type of Built-Up Roof can be used under all conditions. The types of roofs vary with the preference in various localities to meet widely different conditions.

For this reason Certain-teed provides a full range of specifications on Construction Roofs—Type "B"—Asphalt Built-Up Roofs, issued under 10-, 15- and 20-year bond and Tarred Felt

and Pitch Roofs bonded for 15 and 20 years. Certain-teed also presents a Mineral Surfaced 19-in. selva edge Roof. With this complete range, choice is provided and will be found fully described in the table on following page. Complete specifications on all of these varying types of Built-Up Roofs may be had upon request from any one of the Certain-teed Sales Offices.

For Condensed Specifications see below.

Bonding of Certain-teed Roof Installation

All Certain-teed Built-Up Roofs will, when requested, be covered by bond from the National Surety Corporation which guarantees the life of a particular roof for the period covered in the specifications of that particular type. This bond is issued on Roofs laid only by Certain-teed authorized Roofing Contractors in accordance with the Certain-teed specifications for that particular type of roof, and inspected by representatives of CERTAIN-TEED PRODUCTS CORPORATION. For complete information, write the nearest Certain-teed Sales Office.

Selection of Roofing Contractors

No one except authorized Certain-teed Roofers are permitted

to apply Certain-teed Bonded Roofs, the reason for this, of course, being that Roofs of this character, in order to give proper service, must be correctly laid by men who do a thorough job and have proven themselves competent to apply a Certain-teed Bonded Roof.

Consulting Service

We wish to be of service wherever possible in the matter of roof construction and maintenance. Any time you desire to take advantage of our experience or the wealth of information we have gathered over a period of years, communicate with the nearest Certain-teed Sales Office.

CERTAIN-TEED BUILT-UP ROOFING PRODUCTS**Specifications**

Standard specifications dealing with each individual type of Certain-teed Bonded Built-Up Roof shown on the chart on the succeeding page will be supplied on request. The condensed specifications which are shown below can be used as a substitute for the standard specifications by inserting the required items where needed to complete the specifications.

Insulation

The insulation must be firm, capable of withstanding crushing, and of a type that will retain nails. Insulation must be kept dry at all times and protected and sealed at the end of each day's work as the job progresses. Insulation must be applied according to manufacturer's instructions. (For details of "BEAVER ROOF INSULATION" see "Specifications

for Details of Beaver 100% Cane Fibre Insulation"—CERTAIN-TEED PRODUCTS CORPORATION, New York, N. Y.)

Roof Decks

The surface of all roofs should be smooth, firm, dry, properly graded to gutters and outlets and free from large cracks or knot-holes. The roof surface should be carefully broomed and examined and careful attention given to see that all dirt and debris are removed before applying any material.

Labels

All the material mentioned in the above specifications shall bear the registered *Certain-teed* label of manufacture, issued by the CERTAIN-TEED PRODUCTS CORPORATION.

CONDENSED SPECIFICATIONS**Construction Built-Up Roofs**

See Specifications No. 500 and No. 503

Roofing shall be a Certain-teed Construction Roof Type laid in accordance with the Certain-teed specifications for this type of roofing laid over Roofing shall be applied by a roofing contractor authorized by the CERTAIN-TEED PRODUCTS CORPORATION. The roofing contractor shall furnish the Certain-teed Corporation's Surety Bond Guarantee for years.

Material—The material shall be: Sheet No. 1 Certain-teed Construction Roofing; Certain-teed Roofing Asphalt; Certain-teed Liquid Asphalt Primer.

Certain-teed Asphalt Felt Roofs

See Specifications Nos. 506 to 509 and Nos. 518 to 521

Roofing shall be a Certain-teed Built-Up Asphalt Roof laid in accordance with the Certain-teed specifications for this type of roofing laid over Roofing shall be applied by a roofing contractor authorized by the CERTAIN-TEED PRODUCTS CORPORATION. The roofing contractor shall furnish the Certain-teed Corporation's Surety Bond Guarantee for years.

Material—The material shall be: Base Sheet No. 30 Certain-teed Asphalt Felt; Sheets No. 15 Certain-teed Asphalt Felt; Certain-teed Roofing Asphalt; Certain-teed Liquid Asphalt Primer.

Certain-teed Tarred Felt, Pitch and Gravel or Slag Roofs

See Specifications Nos. 512 to 514 and No. 517

Roofing shall be a Certain-teed Ply Tarred Felt Pitch and Gravel or Slag Roof, laid in accordance with the Certain-teed specifications for this type of roofing laid over Roofing shall be applied by a roofing contractor authorized by the CERTAIN-TEED PRODUCTS CORPORATION. The roofing contractor shall furnish the Certain-teed Corporation's Surety Bond Guarantee for years.

Material—The material shall be: Sheets Certain-teed Sheathing Paper (Unsaturated); Sheets No. 15 Certain-teed Tarred Felt; Certain-teed Coal Tar Pitch.

Certain-teed Mineral Surfaced Cap Sheet Roofs

See Specifications No. 510, No. 511 and Nos. 522, 523, 525 and 526

Roofing shall be Certain-teed Mineral Surfaced 19-in. selva edge roofing cap sheet laid in accordance with Certain-teed specifications for this type of roofing laid over

Roofing shall be applied by a roofing contractor authorized by the CERTAIN-TEED PRODUCTS CORPORATION. The roofing contractor shall furnish the Certain-teed Corporation's Surety Bond Guarantee for years.

Material—The material shall be: Sheets Certain-teed Sheathing Paper (unsaturated); Sheets (one square) Certain-teed 19-in. Selva Edge Roofing; Certain-teed Roofing Asphalt; Certain-teed Liquid Asphalt Primer.

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices—New York, N. Y.

CERTAIN-TEED PRODUCTS CORPORATION

CHART ON CERTAIN-TEED SPECIFICATION ROOFS, SPECIFICATIONS AND WEIGHT OF MATERIALS

Years of bond Guarantee	Specification		Type of Deck	Roof deck incline per foot, in.	Surface or finish	Construction		Weight of materials per square										Weight per square applied lbs.	Underwriters rating
	Name	No.				No. layers of material	No. of Moppings	No. 1 Certain-teed or 19 in. selvage edge roofings	Roofing asphalt	Asphalt primer	Asphalt felt	Gravel	Sheathing paper	Tarred felt	Coal tar pitch				
CONSTRUCTION ROOFS																			
10\$	{ Certain-teed Type "B" }	500	Wood	Any	Smooth	{ Two No. 1 smooth Certain-teed roofing }	3	60	80	....	....	....	....	....	....	....	140	C	
10\$	{ Certain-teed Type "B" }	503	Concrete	Any	Smooth	{ Two No. 1 smooth Certain-teed roofing }	5	60	130	8*	....	....	....	....	....	....	190	C	
ASPHALT FELT ROOFS																			
20	{ 20-year asphalt }	520	Wood	½ to 3 in.	{ Slag or Gravel }	{ One No. 30 asphalt felt } { Three No. 15 asphalt felt }	3‡	....	140	....	75	400	....	....	....	....	615||	A	
20	{ 20-year asphalt }	521	Concrete	½ to 3 in.	{ Slag or Gravel }	Four No. 15 asphalt felt	4‡	....	170	8*	60	400	....	....	....	....	630||	A	
15	{ 15-year asphalt }	518	Wood	½ to 3 in.	{ Slag or Gravel }	{ One No. 30 asphalt felt } { Two No. 15 asphalt felt }	2‡	....	110	....	60	400	....	....	....	....	570||	A	
15	{ 15-year asphalt }	519	Concrete	½ to 3 in.	{ Slag or Gravel }	Three No. 15 asphalt felt	3‡	....	140	8*	45	400	....	....	....	....	585||	A	
10	{ 10-year asphalt }	508	Wood	½ to 3 in.	{ Slag or Gravel }	{ One No. 30 asphalt felt } { One No. 15 asphalt felt }	1‡	....	80	....	45	400	....	....	....	....	525||	A	
10	{ 10-year asphalt }	509	Concrete	½ to 3 in.	{ Slag or Gravel }	{ One No. 30 asphalt felt } { One No. 15 asphalt felt }	2‡	....	110	8*	45	400	....	....	....	....	555||	A	
10\$	{ 10-year smooth }	506	Wood	½ to 12 in.	Smooth	{ One No. 30 asphalt felt } { Two No. 15 asphalt felt }	3	....	90	....	60	....	....	....	....	....	150	C	
10\$	{ 10-year smooth }	507	Concrete	½ to 12 in.	Smooth	{ One No. 30 asphalt felt } { Two No. 15 asphalt felt }	4	....	120	8*	60	....	....	....	....	....	180	C	
TARRED FELT ROOFS																			
20	{ 20-year pitch and gravel }	513	Wood	{ Up to 2 in. }	{ Slag or Gravel }	{ One No. 20 sheathing paper } { Five No. 15 tarred felt }	3‡	....	....	....	....	400	5	75	150	630||	A		
20	{ 20-year pitch and gravel }	512	Concrete	{ Up to 2 in. }	{ Slag or Gravel }	Four No. 15 tarred felt	4‡	....	....	....	....	400	....	60	200	660||	A		
15	{ 15-year pitch and gravel }	517	Wood	{ Up to 2 in. }	{ Slag or Gravel }	{ One No. 20 sheathing paper } { Four No. 15 tarred felt }	2‡	....	....	....	....	400	5	60	125	590||	A		
15	{ 15-year pitch and gravel }	514	Concrete	{ Up to 2 in. }	{ Slag or Gravel }	Three No. 15 tarred felt	3‡	....	....	....	....	400	....	45	175	620||	A		
MINERAL SURFACED (19" SELVAGE EDGE) ROOFS																			
15	{ Mineral surfaced 15-year built-up }	525	Wood	1 to 12 in.	{ Mineral granules }	{ One No. 30 and One No. 15 asphalt felt } { Two 19 in. selvage edge roofing }	3	110	90	....	45	....	....	....	....	....	245	C	
15	{ Mineral surfaced 15-year built-up }	526	Concrete	1 to 12 in.	{ Mineral granules }	{ Two 15-lb. asphalt felt } { Two 19 in. selvage edge roofing }	4	110	120	8*	30	....	....	....	....	....	260	C	
10	{ Mineral surfaced 10-year built-up }	522	Wood	1 to 12 in.	{ Mineral Gravel }	{ One No. 30 asphalt felt } { Two 19 in. selvage edge roofing }	2	88	60	....	30	....	....	....	....	....	178	C	
10	{ Mineral surfaced 10-year built-up }	523	Concrete	1 to 12 in.	{ Mineral granules }	{ One No. 15 asphalt felt } { Two 19 in. selvage edge roofing }	3	88	90	8*	15	....	....	....	....	....	193	C	
5	{ Mineral surfaced 5-year built-up }	510	Wood	3 to 12 in.	{ Mineral granules }	{ Two 19 in. selvage edge roofing }	1	88	30	....	....	....	....	....	....	....	118	C	
5	{ Mineral surfaced 5-year built-up }	511	Concrete	3 to 12 in.	{ Mineral granules }	{ Two 19 in. selvage edge roofing }	2	88	60	....	....	....	....	....	....	....	148	C	
SPECIAL ROOF DECKS																			
{ 10 } { 15 } { 20 }	Special roof decks	527	Insulat'n precast gypsum, etc.	½ to 12 in.	As specified	{ As specified }											As specified		

*Approximate weight of 1 gallon of Certain-teed Liquid Asphalt Primer.

‡Also one poured top before the top surfacing of gravel or slag.

||Weight of gravel surfaced roof. Slag surfaced roof weighs 100 lbs. less.

§Smooth surfaced built-up roofs will not carry a bond in North Carolina, Tennessee, Arkansas, Oklahoma or in states south of these states.

For special information write nearest Sales Office or Certain-teed Products Corporation, General Offices, New York, N. Y.

BIRD & SON, inc.

Manufacturers of Bird Asphalt Shingles and Siding

MILLS AND GENERAL OFFICES
EAST WALPOLE, MASS.

CHICAGO OFFICE AND PLANT: 1472 West 76th Street

NEW YORK OFFICE: 295 Fifth Ave.

CANADA: Building Products Ltd., HAMILTON, ONT., MONTREAL, QUE.

For Catalog on Built-up Roofing and Flashings, see File Index

QUALITY HIGHLIGHTS OF BIRD SHINGLES AND SIDING**Specially Prepared Felt**

The felt used in Bird roofing is made by a special felting machine and the fibres are actually felted, allowing the felt to be thoroughly saturated.



firm embedding of every granule. This firm embedding gives better appearance and greater durability.

Durable Color

Because of particular selection and Bird controlled coloring process, all surfacing granules used in Bird shingles are durable.

Complete Saturation

The Immersion Process used in saturating Bird Felt permits 190% to 200% saturation, well above Underwriters' Laboratory Specifications. A completely saturated felt is essential because this is the foundation on which the roofing is built.

Wide Distribution

Bird Shingles, Sidings, and Building Materials are stocked in all parts of the United States, east of the Rocky Mountains, by reputable dealers.

Special Shatter-Resistant Coating

This quality is obtained by special preparation of the coating asphalt and gives a more workable and durable product.

Climatic Resistance

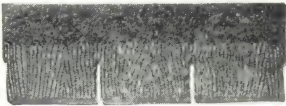
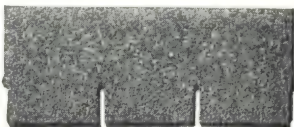
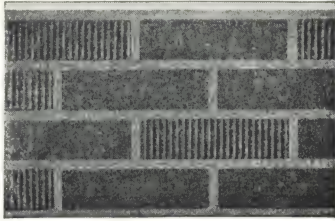
Bird Asphalt Slate Surfaced Shingles and Siding will meet every climatic resistance.

Every Granule Firmly Embedded

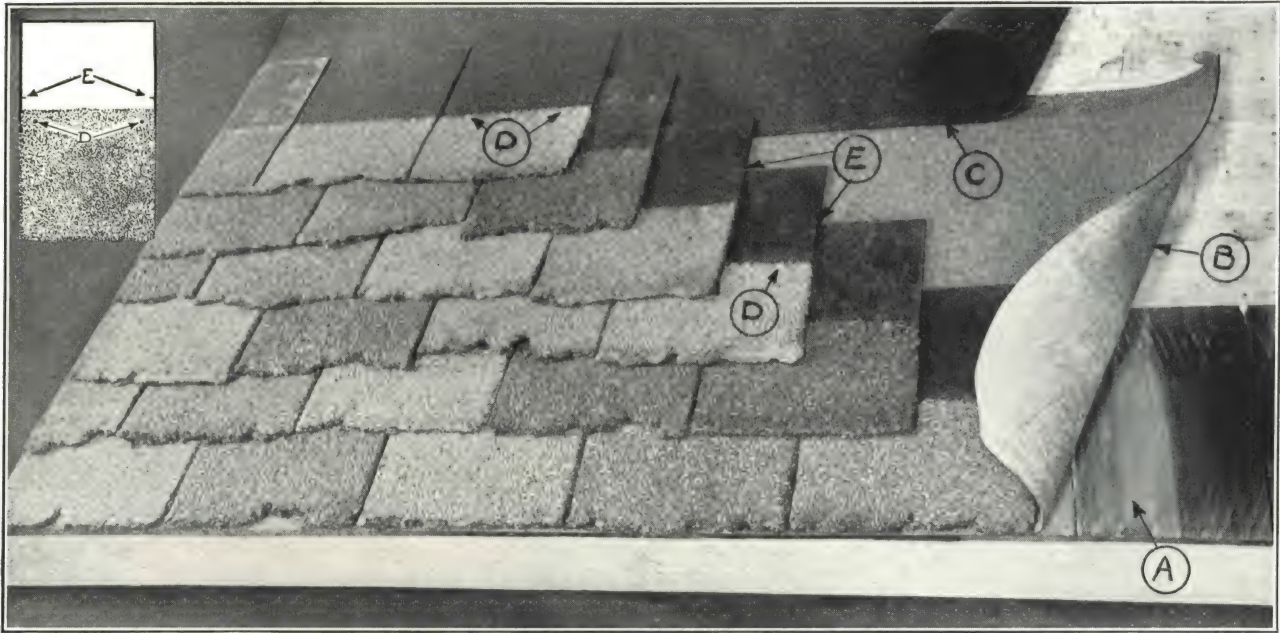
The Mineral granules used in surfacing Bird shingles and sidings are thoroughly cleaned and primed with oil to assure a

High, low, and extraordinary temperature changes will not impair their protective efficiency, beauty, and durability.

TYPES AND SPECIFICATIONS OF BIRD ASPHALT SHINGLES THAT ARE OF SPECIAL INTEREST TO ARCHITECTS

Name	Shape of Shingle	Color	Size, in.	Approx. Wt., lbs.	No. Shingles per sq.	Head Lap, in.	Exposure, in.
CUSTOM BUILT SHINGLES		Slate Blend, a blend of soft colors like hand hewn slate. Made to order in any colored granules regularly available.	12x18	400	172	4	7
WEATHER-TEX 3 in 1 Thick Butt SHINGLES		Green Dura Green Slate Blende	12x36	210	80	2	5
SPECIAL 3 in 1 Thick Butt SHINGLES		Bright Red, Green, Dura Green, Black, Russett Glo, Slate Blende, Sunset Blende, Mt. Green Blende.	15x36	251	80	5	5
INSULATED BRIC SIDING		Bright Red White Mortar Blende B. White Mortar An exterior finish of brick design with a 1/2 in. of insulating board.	12 wide 8 1/2 ft. long	194	12		
NEPONSET BLACK BUILDING PAPER		Saturated and coated. 500 sq. ft. to roll. A sheathing paper standard with Architects for years.	36 wide	50			

BIRD CUSTOM BUILT SHINGLES



General Appearance and Method of Laying

The points as outlined below and illustrated above should be followed to insure a tight roof:

A. At eaves lay a course of wooden shingles extending over fascia board $\frac{3}{8}$ in.

B. Directly over the starter course of wooden shingles lay a 36-in. strip of Bird Black Slate Surfaced Roofing.

C. We recommend that a layer of Bird Neponset Black Waterproof Building Paper be laid horizontally and lapped not less than 2 in. beneath all shingles.

D. Nail shingles through the two holes provided.

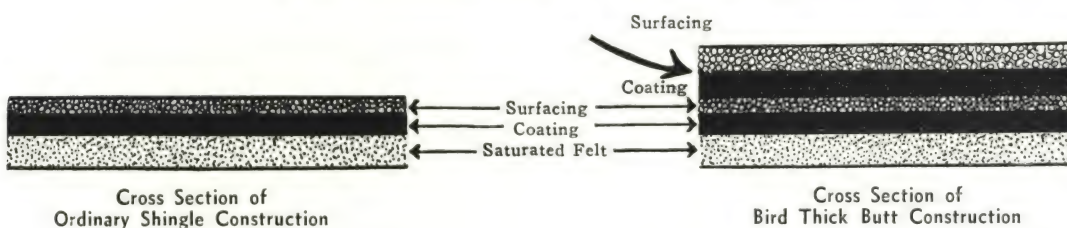
E. The marker on the edge of the shingles when lined up with the top of the underlying shingle will give 7-in. exposure.

General Description of Bird Custom Built Shingles

The massive butts and irregular edges of Bird Custom Built Shingles give a distinctive touch which greatly adds to the beauty of the roof. Each shingle is hand made by a skilled craftsman, assuring extraordinary construction, durability, and beauty.

BIRD THICK BUTT SHINGLES

Have Additional Layers of Real Protection

**Advantages of Bird Thick Butts**

1. Added life because there are double layers of asphalt and surfacing mineral on the exposed portion.
2. Added beauty because the black background showing through the cut-outs more clearly defines the units of color and gives deeper shadow effects.
3. Added weight and massiveness where most needed.
4. Added fire resistance because of extra mineral.
5. Added thickness of butt makes them conform better to roof deck.
6. Added protection because the extra weight on exposed portion holds them firmly in place.

Special Treatment of Mineral

The mineral used in the surfacing of Bird Shingles is specially treated with a low volatile, free flowing, colorless oil.

This oil application cleans and primes the granule, thereby allowing a perfect bonding with the asphalt coating. The mineral is then heated to insure firm embedding in the asphalt coating.

"Shatter-Resistant" Coating

The coating asphalt used in Bird Shingles to seal the saturated felt base and hold the mineral surfacing in place is so treated that it is rendered "Shatter-Resistant." This makes Bird Shingles easier to handle in cold weather and more durable because the ice forming on them will not tear off the mineral surfacing as it melts and slides down the roof.

This special process permits the application of a greater percentage of mineral surfacing. This accounts for the famous "Shatter-Resistant" coating, well known in Bird Thick Butt Shingles.

THE RUBEROID CO.

CONTINENTAL	RUBEROID	DIVISIONS ETERNIT	SAFEPAK	H. F. WATSON
		OFFICES		
NEW YORK	CHICAGO	BOSTON (MILLIS)	ERIE	BALTIMORE
				MOBILE

RUBEROID ASPHALT PRODUCTS

Products

ASPHALT UNIT SHINGLES—Massive and standard weights.

ASPHALT STRIP SHINGLES:

- Square-tabs—standard weight
- Square-tabs—"Thick Butts"
- Supertab—Double Butts
- Octabs—standard weight
- Hexagonal—massive and standard weights
- Art strips—massive and standard weights

BUILDING PAPERS:

- "Safe-n-Dry," Reinforced
- "Cement Curing," Reinforced
- "7-Ply," Reinforced
- "Double-Kraft"

BUILT-UP ROOFING: Asphalt, Asbestos, Coal Tar Pitch and Felt. See separate listing in File Index.

ASBESTOS-CEMENT SHINGLES for Roofs and Side-walls: See separate listing in File Index.

ASBESTOS "NEWMARBLE" and "NEWTILE"; see separate listing in File Index.

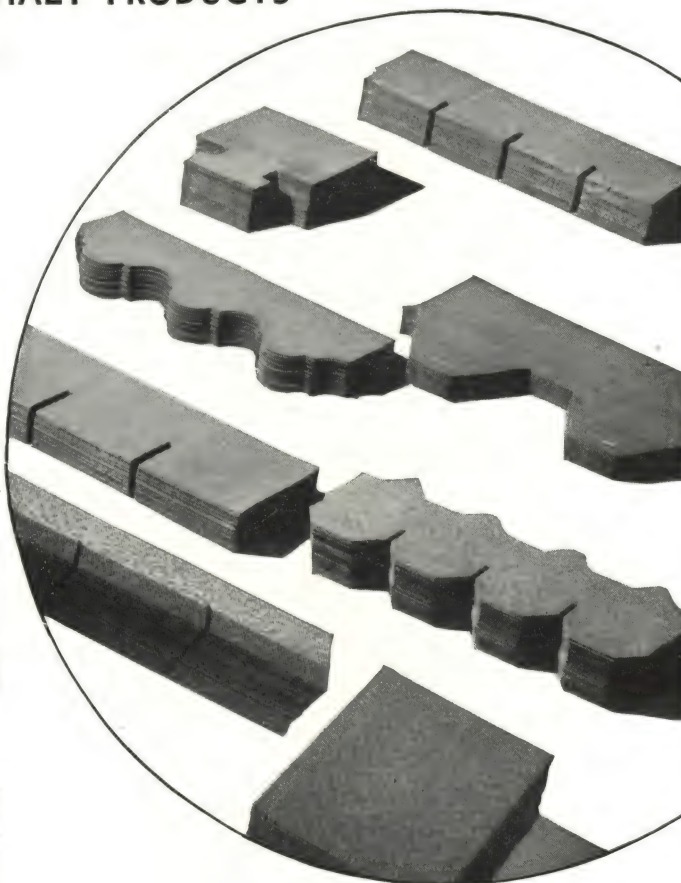
INSULATION PRODUCTS; see separate listing in File Index.

WATERPROOFING COMPOUND.

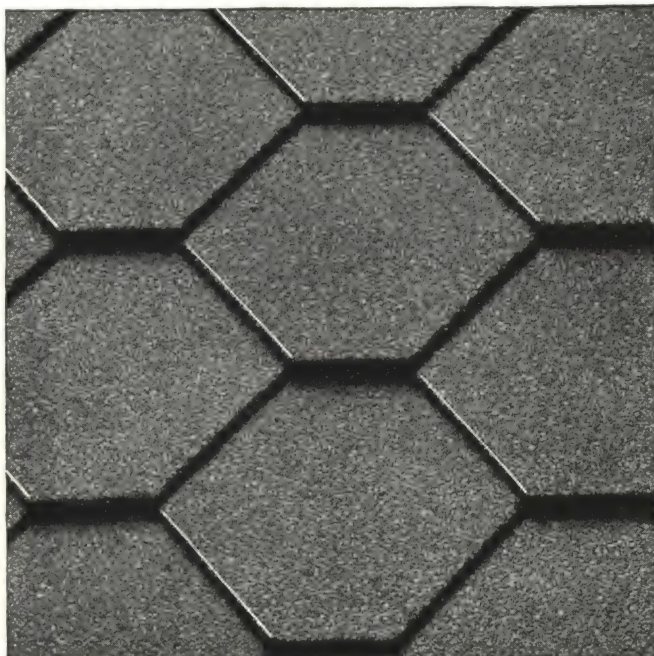
Also Roll Roofing: Asphalt (smooth and mineral surfaced); Asbestos (smooth surfaced); Roof Coatings and Cements; Asbestos Pipe Coverings; Asphalt and Tarred Felts.

A Complete Line of Roof Materials

THE RUBEROID Co. offers you a complete line of roofing materials. Asbestos-Cement Shingles for high-grade homes, schools, libraries, churches, etc., (see File Index). Also Asphalt Shingles for moderate priced homes, garages, stores, etc. Built-up Roofs (asbestos, asphalt or coal tar pitch and felt) for office, public and industrial buildings. Roll roofing, smooth or mineralized, for industrial and farm buildings (see File Index).



Square-Tab Strip Shingles



Massive Hex Shingles

RUBEROID ASPHALT SHINGLES

There is a wide choice of individual (rectangular shingles) and strip shingles in hex, octab and square-tab designs. They come in colors, weights and thicknesses, with headlap protection, to meet varying construction requirements. All are fire-safe and bear the label of approval of the Underwriters' Laboratories, Inc.

Leading Ruberoid Asphalt Shingles

	Size, in.	Weight, lbs.	Pieces per 100 sq. ft.
Massive Units	12x16	325	228
Massive Hex Strips	36x13 $\frac{1}{8}$	220	76
Massive Square Tabs ...	36x12	257	80
Thick Butt Square Tabs.	36x12	210	80

A complete catalogue illustrating each shingle made with size, number of pieces per square, approximate weight, gladly furnished upon request.

RUBEROID Roll Roofing Smooth and Mineralized



RUBEROID Roll Roofings are known for their long life and economy. Many roofs laid twenty and twenty-five years ago are still giving dependable service today.

RUBEROID Roll Roofing is made in two styles:

(1) **Smooth-surface**—Five weights: Light (35 lb.), medium (45 lb.), heavy (55 lb.), extra-heavy (65 lb.), and super-weight (75 lb.) per 108 sq. ft.

(2) **Mineralized (heavy)**—Average approximate weight 90 lb. per 108 sq. ft. Surfaced on one side with mineral granules in several attractive colors. All rolls are 36 in. wide. Each roll carries the Underwriters' Class C Label. Zinc-coated nails and lap cement furnished with each roll.

Class C Label. Zinc-coated nails and lap cement furnished with each roll.

Building Papers

There is also a complete line of building papers. Included are the well-known reinforced papers—"Safe-n-dry" and "7-Ply." For use behind clapboards, stucco, shingles, brick veneer and under floors.

"Safe-n-dry," because of its two sheets of kraft paper, the strong woven jute fabric used and the extra reinforcing cords along each edge, has unusual strength. It is almost impossible to tear. Never becomes sticky in summer or brittle in winter. Clean, odorless, waterproof and air-tight. Rolls 36 ins. wide contain 500 sq. ft. weighing 30 lbs. per roll.

Where unusual insulating values are required, "7-Ply" should be used. Standard rolls contain 250 or 500 sq. ft., 36 in. wide weighing 17 and 34 lbs. respectively.

In addition there are less expensive building papers, saturated, or saturated and coated, in 500-ft. rolls, 36 ins. wide. These are particularly adaptable for use under slate, tile, or other types of roofing where a waterproof protective covering is required to safeguard against moisture penetration when slates, tiles, etc., may become broken through accidents.

Cement Waterproofing Compound

RUBEROID Cement Waterproofing Compound (patented), when mixed with Portland cement, makes leaky cellars or pits bone dry. Its use in stucco entirely eliminates "hair cracking." It differs from other waterproofing compounds in that it does not delay the set or reduce the strength of the mortar. It contains no calcium stearate or other soap compounds.

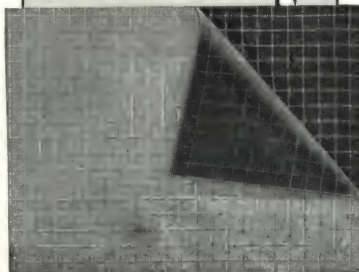
A $\frac{3}{4}$ -in. mortar facing containing Cement Waterproofing on the inside of a structure will resist a 200-ft. head of water from without. This fact makes it especially adaptable for use in pump pits, cellars or other structures below ground. Cement waterproofing will resist action of brine, hot water, steam, oils, distillates and other chemicals. Packed in barrels (450 lbs.), 100-lb. and 25-lb. cans.

"Safe-n-dry" for Curing Concrete Floors

"Safe-n-dry" is also ideal for curing concrete floors, roads, cement walks, aprons, etc. It allows the cement to gradually harden with proper density by retarding the evaporation of moisture.

When used to cover the floor or large poured areas, it saves considerable money over the old-fashioned method of curing by use of hay, sawdust or sand constantly wet down. There is no costly labor of hauling and spreading heavy materials, for "Safe-n-dry" only weighs approximately 6 lbs. to 100 sq. ft.

"Safe-n-dry" eliminates the labor of scraping the drippings from the floor above. It also protects the floors from construction damage while the mechanics, painters, etc., do their work. Because of its strength it stands abuse without tearing. Obtainable in widths of 36, 48, 60, 72 and 84 ins. to fit any job.



Extra Reinforcing Cords Along Each Edge Make It Practically Impossible to Tear

Samples and Literature

Samples and descriptive literature of any product made by THE RUBEROID Co. will gladly be sent upon request. Address nearest office: 500 Fifth Ave., New York, N. Y.; 5333 South Western Ave., Chicago, Ill.; Millis, Mass.; Erie, Pa.; Baltimore, Md., or Mobile, Ala.

UNITED STATES GYPSUM COMPANY

Roofing Products

GENERAL OFFICES

300 West Adams Street, CHICAGO, ILL.

SEE FILE INDEX FOR OTHER USG CATALOGS CONTAINING LIST OF SALES OFFICES

INTRODUCTORY

The United States Gypsum Company, during 1935, continued to expand in the asphalt shingle and roofing field. Roofing plants at North Tonawanda, N. Y.; South Bend, Ind.; St. Paul, Minn.; and South Gate, Calif., give the Company strategic distribution points in the United States. The company operates its own felt mill at Skaneateles Falls, N. Y., for the supply of base felts used in the manufacture of roofing.

The line of products has been standardized at the various plants. Existing standards of quality have been maintained and improved. Careful control and research methods assure the uniformity and quality typical of all USG products. Attention has been given to the improvement of colors on the shingle products, particu-

larly with respect to variegated blends. Packaging has been improved to insure the products reaching the job in prime condition.

A built-up roofing service has been made available with detailed specifications, surety bond, inspection service, and a complete line of products for smooth and mineral surfaced, asphalt or tar saturated rag felt roofs. Specifications and other information concerning built-up roofing are available on request from our district sales offices.

The broadening of the roofing line itself and the increased manufacturing facilities result in a better roofing service for the Company's customers.

USG* SHINGLE TYPES

Note: The six types of shingles described here all carry the Class C Label of the Underwriters' Laboratories, Inc.

Tapered Strip Shingles

The Tapered Strip Shingle, thick at the butt end and thin at the top, has the greater portion of the protective asphalt coating at the butt end where the wear comes. The dimensions of the tabs in relation to their thickness give the shingles a rugged utility and create a heavy shadow line. The Tapered Shingle is available in a number of solid colors and a variety of attractive warm and cool blends, a range adapted to the correct color treatment of any slope-roof dwelling.

Quad* Shingles

USG Quad Shingles have unique turned edges on the tabs along the cutouts. The turned up angle edges give the tabs added rigidity and cast deep shadow lines. Quad Shingles are available in attractive plain colors and blends. No other shingle on the market has the patented angle edge found on Quads, and the shingle is truly distinctive in appearance.

Square Butt Shingles

In addition to the Tapered Strip Shingles and the Quad Shingles, both of which are in the square butt pattern, other three and four tab square butt shingles are produced in a variety of pleasing colors and color combinations. Due to the thoroughly conservative design, square butt strip shingles have always been popular and genuinely appealing to home owners.

Hexagon Strip Shingles

A pleasing variation in design and surfacing is available in USG Hexagon Strip Shingles. A thoroughly asphalt saturated

base coated on both sides and surfaced with attractive colored surfacings combine to form this popular shingle. USG Hexagon Strip Shingles are produced in a full range of colors and sizes for various purposes.

Thatch* Shingles

USG Thatch Shingles offer a pleasing variation in design from the more standard square butt and hexagonal roof patterns. Thatch Shingles have pleasing roof lines when viewed from any angle and are particularly suited to small homes. Their design is such that they offer unusual resistance to high winds. They come in two sizes—10 and 12 in. in width—and in a wide range of colors. The larger type provides full double coverage.

Arro-Lock* Shingles

A most successful lock shingle which requires only two nails per shingle yet the method of nailing secures each shingle at four points. All exposed edges are angular, eliminating the possibility of water following straight line edges over headlap. The locking device, which holds each shingle securely, permits natural expansion or contraction without buckling. This shingle, particularly adapted to re-roofing, is manufactured in a number of colors and color combinations.

Other Shingle Types Manufactured

The USG shingle line includes, in addition to the above types, Standard and Giant Individual Shingles, Dutch Lap Individual Shingles, Tritab* Strip Shingles, Grip-Lock* Shingles, Super-Tite* Shingles, and Brick Siding Strips. Each type of shingle is available in a variety of plain colors and blends.

USG ROLL ROOFING

USG Adamant* Mineral Surfaced Roll Roofing

Adamant is a high quality mineral surfaced roll roofing for use on structures where appearance is important but roofing at lower cost than shingles is desired. Its low initial material

and application cost ideally suit it to industrial properties. It weighs ninety pounds per roll of 108 square feet, 36 in. wide, packed complete with nails, lap cement, and direction sheet for application, and carries the Class C Underwriters' label. It is furnished in a range of colors.

*Trade-Mark.

USG Zeen-X* Corrugated Surfaced Roll Roofing

A corrugated talc surfaced roll roofing of superior quality affording economical protection where long service is paramount. Produced in rolls 36 in. wide containing 108 square feet. Directions for laying and sufficient nails and lap cement for proper application are contained in each roll. Each of the four weights—45, 55, 65, and 75 pounds—carries the Underwriters' Class C label.

USG Imperial Mica* Surfaced Roll Roofing

A substantial roll roofing, mica surfaced on both sides, combining the best materials into roll roofing, moderate in

cost and of proven endurance. Necessary nails, cement, and directions for laying are packed in each roll. Manufactured in 35, 45, 55, 65, and 75 pound weights, rolls 36 in. wide, containing 108 square feet each. The 55, 65, and 75 lb. weights carry the Class C label of the Underwriters' Laboratories, Inc.

USG Dixie* and ParaCo* Talc Surfaced Roll Roofing

A smooth surfaced talc finished roll roofing of great durability at low cost. Produced in three weights—35, 45, and 55 lbs.—in rolls 36 in. wide containing 108 square feet. Directions for laying and sufficient nails and lap cement for proper application are contained in each roll.

OTHER MISCELLANEOUS USG ROOFING PRODUCTS

Our line contains various other types of serrated edge roll roofings, building and sheathing papers, asphalt and tar saturated felts, built-up roofing cap sheets, asphalt, pitch, plastic and liquid roof cements and coatings.



USG TAPERED STRIP SHINGLES

USG HEXAGON SHINGLES

QUAD SHINGLES

THATCH SHINGLES

USG STRIP SHINGLES

ARRO-LOCK SHINGLES

*Trade-Mark.

WILLIAM L. BARRELL COMPANY, INC.

Cotton Duck—Converted Fabrics
40 Worth Street, NEW YORK, N. Y.

BRANCHES

BOSTON, MASS., 52 Chauncy Street
CHICAGO, ILL., 300 West Adams Street

KANSAS CITY, MO., 219 West 8th Street

LOS ANGELES, CALIF., 1206 Maple Avenue
SAN FRANCISCO, CALIF., 235 Montgomery Street

CON-SER-TEX—A CANVAS COVERING FOR ROOFS AND FLOORS

Characteristics of Con-Ser-Tex

Con-Ser-Tex is a specially woven cotton fabric scientifically treated by a chemical process which makes it not only waterproof but preserves it against the ravages of dry rot, mildew, vermin and the elements—the arch enemies of ordinary cotton duck.

The development of the chemical process had its origin in an investigation of the properties of Egyptian mummy cloths which have been known through the ages as possessing extraordinary features of durability. Modern research disclosed the fact that the cotton fibres had been physically altered to prevent capillary attraction and revealed the basic chemical treatment which was used in the process. In the manufacture of Con-Ser-Tex these same properties have been secured along with others which make the material particularly adaptable for its special uses. The chemical processes provide a protective coating to each cotton fibre which prevents the oils in paint from being absorbed by the fibres. In ordinary fabrics, these oils form one of the most destructive elements because of their oxidizing action. No oils or paraffin enter into the manufacture of Con-Ser-Tex.

While paint is necessary to provide a wearing surface on canvas decks, it is the inherent checking tendency of oil paints which not only breaks the surface fibres but exposes the body of the fabric to rotting and mildew. In Con-Ser-Tex these difficulties are reduced to a negligible minimum.

Adaptability and Advantages of Con-Ser-Tex

Con-Ser-Tex has many miscellaneous industrial uses, but in building construction as a roof covering and a floor covering in exposed locations subject to footwear it offers many advantages not obtainable by any other type of covering. Even where footwear is not a consideration it offers many advantages as a roofing material.

Under foot and heavy rain impact it is obviously less noisy than any metal covering.

There is no other type of roofing at once so light and so durable under foot traffic.

It offers advantages in its low heat transmission.

Con-Ser-Tex is an ideal covering for floors and roofs of porches for residences, hospitals, sanitariums, clubs, etc.

It is a most serviceable covering for roofs of frame or fire-proof construction used for roof gardens and for recreational purposes in general.

In the heavy grades it is recommended for roofs where water is collected or retained, such as for spray ponds used in connection with air conditioning on refrigerating plants.

Corrosion will destroy tin and galvanized roofing materials sooner than Con-Ser-Tex will lose its strength and weather-resisting properties.



TRADE-MARK

Practical Utility and Economy

Con-Ser-Tex is so woven and treated that there is no tendency to curl or blister. It lies flat. This is unusual in a material of its type.

As a covering for warped roof surfaces and geometrical forms, such as conical, domical and barrel roof surfaces, Con-Ser-Tex offers evident advantages. Its wide use by railroads for passenger car roofing bears testimony to this effect.

Facility in working makes Con-Ser-Tex useful for flashings, gutter and valley linings and at edges where more rigid materials would present difficulties. Ease of installing results in time saving with consequent economy.

Preparation of Surfaces

Where the construction is of wood frame the surface may be of the common grades of pine, fir, spruce, etc., available in the locality and equal to No. 2 common flooring.

Where foot traffic is intended the surface and framing should be rigid. Material $\frac{7}{8}$ in. thick and 3 ins. or not over 4 ins. wide will be found to give a satisfactory result and it must be tongued and grooved. It should be smooth, with joints planed if necessary. Any knots or pitch streaks must be shellacked. Shiplap should not be used.

Where there is likelihood of dampness from underneath, the wood should be painted on the underside before laying and the joints made up in white lead. White pine in narrow widths is particularly useful in such cases.

When used over masonry surfaces, portland cement topping should be laid and troweled to a smooth surface without projections which might perforate the Con-Ser-Tex, and dressed nailing strips dipped in creosote should be set as shown on accompanying detail.

How to Apply Con-Ser-Tex

Dress the surface by eliminating rough places and sharp edges, then apply a heavy coating of white lead thinned to a pasty consistency with linseed oil as a bedding (see Note). Over this bedding (while still wet) lay the Con-Ser-Tex, slightly stretching it so as to insure a close adhesion to the surface, taking care to arrange laps so as to permit free drainage.

If Con-Ser-Tex is to be laid in parallel courses with the building, the strips start from the outer or lower edge of the surface to be covered. Con-Ser-Tex should be turned up or flashed 4 to 6 ins. at walls to insure a watertight result.

While Con-Ser-Tex is stretched, fasten with $\frac{7}{8}$ -in. copper or galvanized tacks 4 ins. apart on edge to be lapped. Coat the upper, exposed surface of the edge to be lapped $1\frac{1}{2}$ ins. with the bedding paint, then apply the next strip, allowing a lap of not less than $1\frac{1}{2}$ ins. Fasten with tacks $\frac{3}{4}$ in. apart.

After Con-Ser-Tex is laid and set, apply a coat of good quality lead and oil paint, and a heavy second coat of



The Pier Casino, Daytona Beach, Florida
Con-Ser-Tex covers the largest dancing pavilion south of Atlantic City



Club House, Empire City Race Track, Mt. Vernon, N. Y.
Con-Ser-Tex is giving service on the porch floor and roof

best grade Yacht Deck paint after the first is thoroughly dry.

Note: We can furnish a special bedding paint which has greater adhesive qualities than ordinary white lead and oil in which to set the Canvas.

Grades of Con-Ser-Tex

Grade E—The lightest grade of Con-Ser-Tex, suitable for roofing small areas where traffic is very limited.

Grade G—A medium weight, suitable for medium sized porch floors and roofs where traffic is not excessive.

Grade I—A heavy weight, suitable for roofing and flooring in residences and semipublic buildings where heavy traffic exists.

Grade K—The heaviest grade, designed for use in public buildings and all places where severe conditions exist.

Grade XXX—A special extra heavy grade to meet extreme conditions. Prepared only to order. Price upon application.

Economy in Cost and Maintenance

The first cost of Con-Ser-Tex is reasonable and its upkeep practically nil, requiring painting only as often as the rest of the building.

LIST PRICES* OF CON-SER-TEX PER LINEAR YARD

Width, in.	Grade E	Grade G	Grade I	Grade K
30	\$1.07	\$1.17	\$1.26	\$1.32
36	1.29	1.37	1.50	1.59

Note: The above widths carried in stock. Other widths and special heavier weights processed to order. *Discounts furnished on request.

Advisory Service

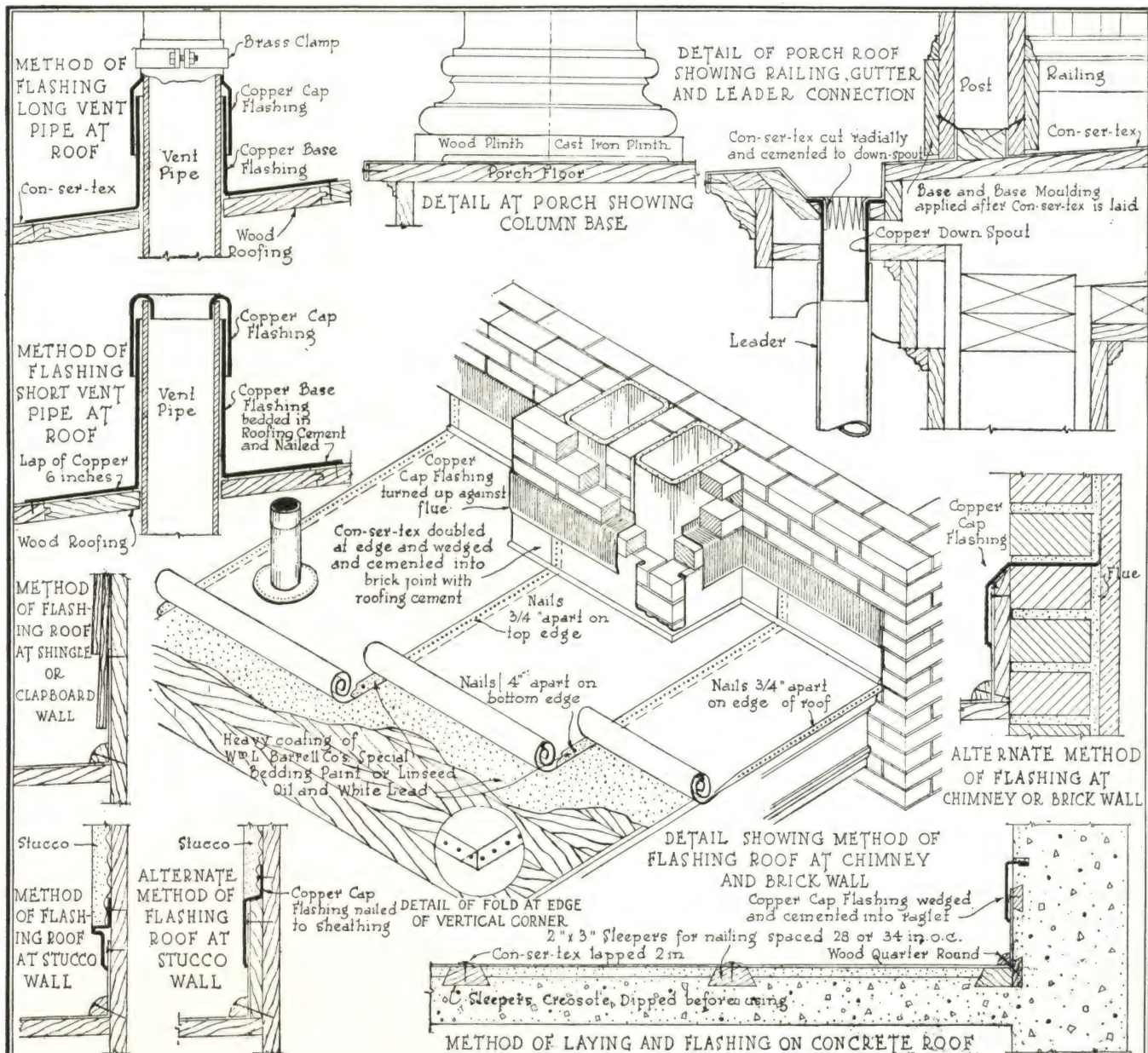
On receipt of dimensions of the surface to be covered, we will submit an estimate of cost, also a diagram showing the most economical method of laying Con-Ser-Tex, eliminating to the greatest possible extent all waste in cutting.

There is no charge for this service.

Guarantee of Material

Our company stands back of its products. We guarantee Con-Ser-Tex to be waterproof and to remain so for a period of ten years when laid and maintained in accordance with our instructions given on request with submission of drawings.

We do not, of course, guarantee Con-Ser-Tex against extraordinary conditions of traffic wear.



W.M.L. BARRELL CO.
INC.

DETAILS SHOWING METHOD OF LAYING AND
FLASHING CON-SER-TEX ROOFING CANVAS

DRAWING NO. 1
SCALE 3/4" = 1 FT.
IN. EQUALS 1 FT.

BARNETT CANVAS GOODS & BAG CO., INC.

Roofing and Porch Canvas, Awnings, Tarpaulins and Canopies

TELEPHONES
Market 2160-2161
Keystone Main 7564

128 Arch Street
PHILADELPHIA, PA.

REPRESENTATIVES: BALTIMORE, MD.; PITTSBURGH, PA.; CINCINNATI, OHIO; YORK, PA.
ALSO IN OTHER PRINCIPAL CITIES

Barco-Dex Roofing and Porch Canvas

Barco-Dex is a canvas especially designed and woven for covering flat roofs, floors and decks in any type of building. It is so constructed as to eliminate entirely the tendency of ordinary cotton fabrics to curl and buckle. No chemicals are used in the manufacture of Barco-Dex and it is unaffected by sun, wind, rain, snow and frost even after years of service. The only protection required is a coat of lead and oil paint every two or three years at the time the rest of the house is painted. Barco-Dex gives superior service.

Where Barco-Dex Should Be Used

From the viewpoint of the architect, contractor and owner Barco-Dex furnishes the ideal covering for porch roofs, piazza floors, sleeping balconies and similar locations where an attractive, economical and durable material is required. Barco-Dex is sound-proof, non-heat radiating and non-conductive to heat and cold. It is easily and quickly laid and its upkeep is practically nothing. It withstands footwear to a remarkable degree and for this reason provides an excellent material for covering areas subject to pedestrian traffic.

Barco-Dex has been much used for lining wood box gutters and in addition to the ease of applying has been found to be most durable. It has also been used with the utmost satisfaction as a covering for hips and valleys under other types of roof coverings and for certain forms of construction it makes an excellent flashing.

Application of Barco-Dex

Before applying Barco-Dex the base surface should be cleaned thoroughly and dressed down to eliminate rough places and sharp edges. Over this surface the canvas may be laid direct without bedding or a bed may be prepared of white lead thinned with linseed oil to a paste consistency. This should be spread in a heavy coat and while the bedding material is still wet, the canvas should be drawn and stretched slightly to insure a good bond to the base surface.

When the canvas is laid parallel to the building, the outer or lower strip should be laid first and the laps of the following strips should be toward the first strip. Lap should be not less than 1½ ins. Against walls and other vertical surfaces the canvas should be turned up from four to six inches and fastened securely. Cover with cap flashing where necessary.

When Barco-Dex is stretched, fasten the exposed edge with ¾ in. copper or galvanized tacks spaced 4 in. apart. After tacking, spread the edge with a coat of bedding paint 1½ ins. wide and apply the next strip, lapping over 1½ ins. in the same way, and tack through the lapped edges with ¾ in. tacks spaced ¾ in. apart.

When the entire surface has been covered and the flashing completed, give the canvas a light coat of lead and oil paint.



After this coat is thoroughly dry apply second and heavier coat.

Grades, Weights and Prices

Barco-Dex is furnished in the grades and weights listed below. Selection of the proper grade will depend upon service conditions and the location of the roof or floor. The 36-in. width is preferable for laying although some contractors use the wider strips.

SPECIFICATIONS AND PRICES OF BARCO-DEX

Width, in.	White No. 300 per yard	Khaki No. 314 per yard	White No. 128 per yard	White No. 126 per yard	Khaki No. 1108 per yard
36	\$0.80	\$1.05	\$1.10	\$1.30	\$1.50
54	.....	.....	1.60	1.85	2.25
60	.....	.....	1.90	2.10	2.50
72	.....	.....	2.25	2.40	2.80
Approximate weights per sq. yd., oz.	16	19	20	22	26

Prices subject to discount.

All prices are based on a lineal yard. The 36-in. width is the most popular. All the above widths and weights carried in stock.

Bartex Cement

Bartex Cement, used for waterproofing and cementing the seams together during the process of tacking the Barco-Dex, gives an especially water-tight installation. Cannot be used as a bedding.

SIZES AND PRICES OF BARTEX CEMENT

¼ pint can.....\$0.50	1 quart can.....\$2.50
½ pint can......80	½ gallon can..... 4.50
1 pint can..... 1.40	Prices subject to discount.

Awnings and Canopies

Each year more and more architects are appreciating the fact that awnings and canopies should be selected and installed to harmonize with the building on which they will be used. The BARNETT CANVAS GOODS & BAG CO., INC. has unusual facilities for the manufacture of any type of awning and canopy and we are pleased to be able to offer to the architect, contractor and owner, the results of our extensive experience in this work. We will welcome an opportunity to co-operate with the architect in the preparation of his preliminary designs.

A Few Users of Barco-Dex

State Sanatorium at White Haven, Pa. Architect, Stewardson and Page, Philadelphia; Roofers, Chew-Bittel Co., Germantown, Pa.

St. Vincent's Hospital, Philadelphia, Pa. Architect, Philip Johnson, Philadelphia, Pa.

Lancaster Municipal Airport, Lancaster, Pa. Architect, J. B. Harman, Lancaster, Pa.



The Tower at the Lancaster Municipal Airport



The Hangar at the Lancaster Municipal Airport

Barco-Dex was specified for this installation

ROOFING 8

- SECTION -

CATALOGS 22 to 36

SLATE, TILE AND METAL

BUCKINGHAM-VIRGINIA SLATE CORPORATION

1103 East Main Street, RICHMOND, VA.

QUARRIES AND SHIPPING POINT: ARVONIA, VA.

Product

BLUE-BLACK UNFADING SLATE for every building purpose, including Roofs, Floors, Flagging, Terraces, Garden Walks and Structural Uses.

Awards of Merit

First Award: London 1857.
Gold Medal: Philadelphia 1876.
Gold Medal: Chicago 1893.
Gold Medal: St. Louis 1904.

Buckingham-Virginia Roofing Slate

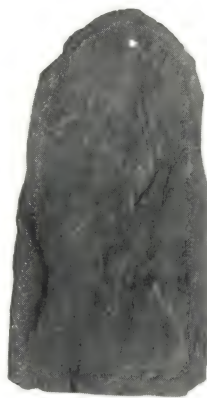
This Slate is famous for its texture and the history of its enduring, unfading quality. There is no record over a period of one hundred and fifty years that there has been any change in this slate. Houses which have been standing for a hundred years or more with the slate fastened on with hand wrought nails show no fading or disintegration.

In 1835, the geological report made by W. R. Rogers to the Legislature of Virginia, called attention to Buckingham Slate, and stated—

"In texture, density and capacity for resisting atmospheric agents, it can scarcely be excelled in any part of the world."

We respectively solicit Architects' specifications for Buckingham-Virginia Slate on basis of proven quality and unsurpassed texture. We guarantee it to be unfading and non-disintegrating. It, therefore, can be matched after any length of time.

Having the largest production of Blue-Black Unfading slate in the United States, prompt shipment can be made from stock $\frac{3}{16}$ to 1 in. thick.



**Buckingham-Virginia
Made by Slaves**

The above piece of Buckingham-Virginia Slate, rough hewn from "top rock," was quarried shortly after the surrender of Cornwallis at Yorktown.

It shows no sign of fading or decay. For 150 years it has protected the building upon which it was roofed and preserved the beauty which the architect built into that structure.

Characteristics of Quality

Lowest Absorption—Since moisture and heat are the destructive elements, low absorption means long life. Buckingham-Virginia Slate has an average absorption of less than .02 per cent—so low as to be scarcely measurable.

Greatest Strength With and Across the Grain—Many slates are strong across the grain but weak with the grain, and therefore likely to "sculp." Buckingham-Virginia Slate is equally strong in either direction. It has an average modulus of rupture of over 10,000 lbs. per sq. in.

Highest Resistance to Acids—"In New York City all rain water is acid. Tests show that in six months the equivalent of 1000 tons of concentrated sulphuric acid is precipitated on that city's roofs and streets. That is enough to eat up forty carloads of iron roofing; it disintegrates even building stones."

—(From "Weather" by Free and Hoke.)

When immersed in sulphuric acid in accordance with the Government specification, Buckingham-Virginia Slate shows no softening even to the extent of .001 of an inch.

It Is One of the Few Unfading Slates—Fading in slate is an indication of disintegration, an ugly whitening and flaking that weakens the roof and ruins the architectural ensemble. Buckingham-Virginia is unfading under all conditions.



Home of William Byrd II, "Westover-on-the-James," Roofed with Buckingham Architectural Slate
Considered by many the finest example of existing architecture of Colonial Virginia

H. A. MATOT

Miner, Manufacturer and Shipper of Roofing Slates and Slate Products

MAIN OFFICE
POULTNEY, VERMONT

Products

ROOFING SLATE—Commercial, Architectural and Textural.

STRUCTURAL SLATE.

FLOOR SLATE.

GARDEN WALK FLAGGING.

Facilities

Slate quarries personally owned and operated, contain unlimited slate deposits of unsurpassed colors and quality and thereby harmonious blending and uniformity of slates, also prompt shipment, is assured.

Service

Samples of any special size and all special architectural service, including detailed roof layouts gladly furnished upon request.

Adaptability

The unexcelled quality, exquisite variety of colors, and distinctive texture of Matot's Slate affords the architects a choice of color combinations to blend harmoniously with each type of architecture and with the surroundings. This slate is entirely free from ribbons. Exposures to extremes of any weather conditions have no effect upon the durability of this material. Is reasonable in cost and its permanency makes it a most economical roof.

Specification Suggestions

For Roofing Slate for a Textural Roof—Use Matot's Slate 20 to 12 in. lengths by random widths; thicknesses $\frac{1}{4}$ to $\frac{1}{2}$ in.; laid with the different thicknesses scattered evenly over the roof surfaces and in such a manner as to give the same textured effect from eave to ridge. Two nailholes punched in each slate. Slate to be laid with not less than 3-in. lap. Colors to be

For a Graduated Architectural Roof—Use Matot's Slate in lengths from ... to ... in. (made from 24 to 12 in. lengths) by random widths; thickness from ... to ... in. (made from $\frac{3}{8}$ to $1\frac{1}{4}$ in.); colors Two nailholes punched in each slate. All slate to be laid with not less than 3-in. lap.

For a Standard Commercial Roof—Use Matot's Slate in standard $\frac{3}{8}$ in. thickness; lengths ... in. (made from 24 to 10 in. lengths) by random widths; colors Two nailholes punched in each slate. All slate to be laid with not less than 3-in. lap.

Color Classification

Unfading Green—A beautiful unfading slate in light dark, and medium shades, a large percentage contains a distinctive mottling.

(Tests made in the Mining Laboratory of Lafayette College by Albert H. Fay, followed the standard method advocated by the American Society for Testing Materials, not only shows that this slate meets, but far exceeds, the Grade A requirements of Federal Specifications. Copy of these analyses, covering Moisture Absorption, Acid Resistance, Modulus of Rupture, and Modulus of Elasticity, will be gladly furnished on architect's request.)

Unfading Mottled Purple and Green—Purple and green delightfully blended in light, medium and dark shades.

Unfading Grey—An exceptionally fine textured, even grained slate in a variety of light, medium, and dark shades. Ranging from clear to clouded.

Unfading Clear Purple—Very rich tones of purple. Grey Black—Light and dark shades.

Variegated Purple and Green—Predominant color being purple, some contain green spots.

Weathering Green or Sea Green—Dark and light shades of green, a portion of which will change to various shades of browns, tans, and buffs after exposure to weather conditions.

Note: Above slates furnished in any color or combination of colors or graduation from $\frac{3}{8}$ -in. up to and including $1\frac{1}{4}$ -in. thickness.

Golden and Bronze Pheasants—Brilliant autumn shades which give a delightful effect when used separately or with any of the above-mentioned colors. Good, sound, solid material. Thickness from $\frac{1}{4}$ in. up to and including $1\frac{1}{4}$ in.

Freaks or Rustics—Come in buffs, browns, greys, and purples. Thicknesses from $\frac{3}{8}$ in. up to and including $1\frac{1}{4}$ in.



New Berkeley Dormitory, Yale University, New Haven, Conn.

JAMES GAMBLE ROGERS, Architect
Roofed with Matot's Graduated Architectural Slate

Partial List of Buildings Roofed with Matot's Slate

BUILDING

Yale University—
Sterling Law School, Quadrangle Group, Trumbull College, New
Berkeley Dormitory Group, Timothy Dwight College
First Presbyterian Church
St. Joseph's College Chapel
Phillips Exeter Academy—
Conference Building, Academy Buildings and Dormitories
Tufts College, Physical Education Building
Wheaton College Dormitories
Trenton State Teachers College
United States Marine Hospital
St. Peter's and St. Paul's Cathedral

LOCATION

New Haven, Conn.
Paducah, Ky.
Kingston, N. J.
Exeter, N. H.
Medford, Mass.
Norton, Mass.
Mercer County, N. J.
Portland, Maine
Lewiston, Me.

ARCHITECT

James Gamble Rogers
George Awsumb
Ferdinand Durang
Cram & Ferguson
Andrews, Jones, Biscoe & Whitmore
Cram & Ferguson
Guilbert & Betelle
Government
T. G. O'Connell

O'BRIEN BROTHERS SLATE CO., INC.

Quarriers and Manufacturers of Roofing Slate and Slate Flagging

MAIN OFFICE

GRANVILLE, N. Y.

QUARRIES—PAWLET, VERMONT

Products

ROOFING SLATE—Commercial and Architectural.

STRUCTURAL SLATE.

FLOOR SLATE.

GARDEN WALK FLAGGING.

Service

The product of our quarries is hard, dense slate rock of a degree of quality and color peculiar to the district. The quarried rock is made into roofing slate, slate flooring and garden flagging at our own quarries by experienced craftsman in strict accordance with approved details and specifications.

All orders are executed under our personal supervision, assuring our clients that the years of our experience as slate makers have gone into the preparing of their material for the roof, floor or flagging.

Architectural Service

We will gladly prepare sketches, color schemes, specifications, details, etc., for all types of slate roofs, slate flooring and slate for landscape work.

Textstone Slate Roof

For the Architects who desire a Rough Texture roof at the least possible cost we suggest the specifications read O'Brien Brothers' Slate—Rough Texture— $\frac{3}{16}$ to $\frac{3}{8}$ in. thick, 22 to 10-in. lengths by random widths, equal proportion of each length. This material is avail-

able in all colors and the Architect should denote the percentage of each color he desires.

Colors Available

Unfading Green—Considered one of the best products manufactured in Vermont Roofing Slate, absolutely unfading and a certificate is furnished by the Unfading Slate Association to the effect that our slate is unfading.

Unfading Mottled Green and Purple—The green and purple color appears in each individual slate. A certificate is furnished by the Unfading Slate Association with every shipment which guarantees that the slate is unfading and is of the best possible slate rock obtainable.

Gray—This slate is furnished in two shades, a light and dark, and is of a somewhat rougher texture than our other slate.

Weathering Green—A commercial slate that gives the owner the best possible roof protection at the least possible price. This material fades out but this fading does not affect the watertightness of a roof of this color.

Vermont Black—A rough texture slate produced only in $\frac{1}{4}$ -in. and thicker thicknesses. Some are a shiny black while others are sort of gray-black.

Rustics—The quarry people call them Freaks, they are a top rock of very poor qualities for durability. The bronze and yellow colors disappear after being exposed to the weather. This type of slate is recommended only in $\frac{3}{8}$ -in. and thicker thicknesses.

A FEW REPRESENTATIVE INSTALLATIONS OF O'BRIEN BROTHERS SLATE ROOFING

INSTALLATIONS	LOCATION	ARCHITECT
Salvage Residence	Glen Head, L. I., N. Y.	Roger H. Bullard
Osborne Home	Harrison, N. Y.	James Gamble Rogers
Bathhouses	Saratoga Springs, N. Y.	J. H. Freedlander
Wilton Lloyd Smith Residence	Lloyds Neck, L. I., N. Y.	Bertram Grosvenor Goodhue Associates
Central Islip State Hospital	Islip, L. I., N. Y.	William Haugaard
Patterson Residence	Dayton, Ohio	H. T. Lindeberg
Connecticut Mutual Life Insurance Building	Hartford, Conn.	Benjamin W. Morris
Euthenics Building, Vassar College	Poughkeepsie, N. Y.	York & Sawyer
Service Building, Taft School	Watertown, Conn.	James Gamble Rogers
Tennis Courts, Marshal Field Estate	Lloyds Neck, L. I., N. Y.	Warren & Wetmore
Edsel Ford Residence	Seal Harbor, Me.	Duncan Candler
Athletic Group	Saratoga, Springs, N. Y.	Dwight James Baum

ESTABLISHED 1869

RIISING & NELSON SLATE CO.

Miners, Makers and Shippers of High Grade Slate

MAIN OFFICE

WEST PAWLET, VERMONT

NEW YORK OFFICE, 101 Park Avenue

DETROIT OFFICE, 2539 Woodward Avenue

CHICAGO OFFICE, 2554 West Harrison Street

PHILADELPHIA OFFICE, 2030 Upland Way, Overbrook

WASHINGTON OFFICE, 1427 Eye Street, N. W.

ARCHITECTS' SERVICE DEPARTMENT, 101 Park Avenue, NEW YORK, N. Y.

ProductsARCHITECTURAL and COMMERCIAL
ROOFING SLATE.SLATE for FLOORS and WALKS.
GARDEN FLAGGING.

TRADE-MARK

Production and Service

The production of our quarries is endowed by nature with an exceptionally interesting surface texture and soft blending of color tones which can be worked into any desired sizes and thicknesses, thus providing a material admirably suited to the designing of roofs adaptable to different types of architecture such as Tudor, Georgian, Cotswold, Colonial, English, French, Dutch and Normandy, smooth, medium or rough texture as desired.

In order that the roof may harmonize with the rest of the building it is necessary that all of these elements—texture, colors, sizes and thicknesses—should be worked into a design, to accord with the type of architecture chosen. This does not necessarily mean just certain percentages of colors, sizes and thicknesses but a carefully worked out design for each individual building. To be of assistance in the designing of such roofs we maintain an efficient Service Department and architects are invited to make use of this specialized service.

Samples of the various types and colorings of slate, literature and estimates will be gladly sent upon request.



House of Mrs. Lewis Bowman, Bronxville, N. Y.
LEWIS BOWMAN, Architect

Architectural and Commercial Slate

Verde Unique—This is a beautiful dark unfading deep green. Darker in shade than that from any other quarry and therefore exclusive. It is particularly adaptable for the Colonial and Georgian type of architecture but may be used with satisfactory results on other types where a dark green roof is desired. It may also be used to great advantage in color combinations. Any thickness or graduation from $\frac{1}{4}$ in. up.

Velenheli Purple Blend—A distinctive unfading rich purple with tints of green, blending to a more even mixture of the two shades. It is also an exclusive production, and is adaptable to the Colonial and Georgian periods of architecture. Also used advantageously in a number of color combinations. Any thickness or graduation from $\frac{1}{4}$ in. up.

Vermont Black and Gray Black—This slate varies from dark gray to black, having a very interesting texture and is adaptable to English, French and Dutch types of architecture. Also as a background in a mixture with other colors. Any thickness or graduation from $\frac{1}{8}$ in. up.

Imperial Unfading Green—A standard of perfection, permanent color, medium dark shade suitable for the Colonial and other types of architecture. Any thicknesses or graduation from $\frac{1}{8}$ in. up.

Unfading Mottled Green and Purple—Makes a roof with

rich, beautiful mottling of the green and purple shades. These slate blend nicely together and they are also used in numerous combinations. In any thickness or graduation from $\frac{1}{8}$ in. up.

Variegated Purple—In this slate the purple color predominates, part being clear purple, but some with green spots and shadings. Makes a handsome roof at a moderate price. Any thickness or graduation from $\frac{1}{8}$ in. up.

Unfading Mottled Gray—This slate varies in coloring from medium light to dark, and from nearly clear to a nicely clouded effect. It is an exceptionally good fast color slate and moderately priced. Any thickness or graduation from $\frac{1}{8}$ in. up.

Sea Green-Weathering Green—There is no better quality slate and it is used more frequently than any other type. It weathers beautifully to varying shades of greens, grays, buffs, soft browns and other tints. Sold at a comparatively low price, it is not only used by itself but in practically all combinations that contain weathering slate. Any thickness or graduation from $\frac{1}{8}$ in. up.

Pheasants—These richly colored rustic slate in various shades of golden, brown, bronze and rust stained blacks are used in many color combinations. As quarried and selected by us they make a permanent roof. These slate have been colored in years past by water seepage carrying with it different minerals which have produced the unusual and surprising colors. These colors, which will not change, are used in various

proportions as an artist uses high lights on a painting. Any thickness or graduations from $\frac{1}{4}$ in. up.

Monson Maine—This slate which is unsurpassed for strength and lasting qualities recommends itself to the architect who is seeking the finest type of uniform unfading black slate. It is shipped direct from our quarries in Maine and receives the same careful supervision and inspection as other slate produced by us.

This beautiful black slate costs only a little more at the quarry, the freight charges are the same, and it costs no more to apply than inferior slate. Hence, a truly high class roof may be specified without seriously increasing the total appropriation for the building. Particularly adaptable to the Normandy and French types of architecture and design. Any thickness or graduation from $\frac{1}{8}$ in. up.

Slate for Floors, Terraces, Walks and Gardens

We produce an exceptional quality of split, rubbed or planed surface, trimmed or sawed edges of flagging slate.

Irregular shapes, random sizes, rectangular shapes or regular size pieces.

In full range of colors and any thickness.

Samples and literature sent on request.

SHELDON SLATE PRODUCTS CO., INC.

43 Main Street, GRANVILLE, N. Y.

BRANCH OFFICES

PORTLAND, ORE., 2603 S. E. Grand Avenue
 NEW YORK, N. Y., 101 Park Avenue
 CHICAGO, ILL., 1645 So. Crawford Avenue
 PITTSBURGH, PA., 259 Melwood Street

PHILADELPHIA, PA., Architects Building
 CINCINNATI, OHIO, 831 Temple Bar Building
 DETROIT, MICH., 243 W. Congress Street

SEATTLE, WASH., 1107 W. Idaho Street
 ATLANTA, GA., 419 Red Rock Building
 DALLAS, TEX., 3905 Normandy Street
 MEMPHIS, TENN., 440 Decatur Street

Approved Manufacturers of Slate Products by National Association of Investigating Committees of Architects and Engineers,
 July 15, 1935

Products

Manufacturers of COMMERCIAL and ARCHITECTURAL ROOFING SLATE and Slate Products of every description.

Personal executive attention is given every order. Truck delivery will be made when required direct to the job within a radius of 300 miles of Granville.

Colors

All or any of the following colors can be readily supplied either for roofing, flagging or structural purposes.

Unfading Green and Gray—The green as deep in color as any to be found in the Vermont-New York slate belt. The gray of a medium light shade. Can be furnished singly or in such percentage of either color as may be desired.

Unfading Mottled Purple and Green—A mixture of green and purple tones in each individual slate. No two alike. Some with more green than purple—others vice versa—and some nearly purple. All of steadfast color. Although custom and trade names have given rise to the term, purple—the so-called purple tones are actually shades of dark maroon.

Mottled Gray Black—A dark gray background with lighter and darker gray mottlings. Available in both unfading and semi-weathering material.

Hard Vein Antiques—From rock formation centuries old, of a character that will not permit manufacturing into slate less than $\frac{3}{8}$ in. up to $\frac{1}{4}$ in. and 1 in. thick. Background green and gray with predominating surface light and dark shades of bronze, creating an aged effect such as only time and the elements could produce.

Slates with brighter color effects known as "Golden Pheasants" available in limited quantity not exceeding $\frac{1}{2}$ in. in thickness.

Semi-Weathering Green and Gray—Colors furnished separately or so combined as result of special tests, uniform percentage on exposure weather to soft tones of buff and brown—balance retain original green and gray tones. Unexcelled for low initial cost and unlimited durability. Particularly effective and decidedly desirable for combining with other colors as a mellowing factor to avoid sharp contrasts. Modulus of rupture, 14,000 lbs. per sq. ft. Porosity, less than $\frac{1}{4}$ of 1%.

Unfading Red—Of steadfast color. Physical resources ample to insure unlimited supply. Available for roofing and structural installations, such as stair treads, floor tile, sills, etc. Red slate is particularly interesting and exclusive, inasmuch as it is only in Washington County, New York, that slate of this color has been found in deposits of commercial value. Costs less than red marble for structural uses.

Redstone—A crushed red slate product for walks and driveways. Packs down under use. Comparable in hardness to any other product used for same purpose. Will not injure automobile tires or shoes. A distinct adjunct to any landscaping project.

Special Rough Texture Slate—This ranges in promiscuous thicknesses $\frac{3}{8}$ to $\frac{3}{4}$ in. Available in all of the colors described herewith.

The use of these slates in accordance with our layout and specifications guarantees the finest low priced architectural roof obtainable. Architects desiring to reduce the cost of a building, including the roof, will make no mistake in substituting either these rough texture or the commercial varieties.

Vermont Black and Gray Black—Intermingled shades. A semi-weathering product. A small percentage of these slates will usually be found an effective addition to any color scheme.

Sheldon's Olde English Combination No. 12—Generally conceded one of the highest achievements in the fabrication of architectural roofing slate. A beautiful blending of soft colors comprising greens, grays, buffs, in just the right proportion to develop a roof of unusual character. Simply specify "Roofs to be covered with Sheldon's Olde English Combination No. 12 (following with maximum and minimum thicknesses and exposures) as manufactured by SHELDON SLATE PRODUCTS CO., INC., Granville, N. Y., in accordance with layout as approved by architect."

Laboratory Tests

Sheldon's slates will fully measure up to the standards of excellence established by any tests thus far devised for determining the inherent value of the material.

Architectural Service

Sketches, layouts, samples and general or technical information bearing on any phase of a slate installation promptly tendered. Roof applications or setting of slate for structural or underfoot purposes, personally supervised when conditions require. Specifications to meet certain conditions will be prepared and submitted gratis on request.

Manufacturer's Certificate

Architects wishing to insure the complete fulfillment of their specifications may confidently incorporate in same the name of SHELDON SLATE PRODUCTS CO., INC., and require the contractor to furnish a certificate that the slate furnished is in accordance with the specifications.

Metal Work, Flashing Details and Specification Forms

Standard practise covering all of these roof details, owing to limited space, cannot be given here but will be furnished any architect on request.

Samples

Samples of any of our products will be furnished on request, charges prepaid.



New Gideon Putnam Hotel, Saratoga, N. Y., Roofed with Sheldon Slate $\frac{3}{4}$ to $\frac{3}{8}$ -in. Thick
 M. T. REYNOLDS, Architect



Close-up of the Gideon Putnam Hotel Roof

ESTABLISHED 1859

VERMONT STRUCTURAL SLATE CO.

Quarriers, Designers and Finishers of Vermont Natural Slate

MAIN OFFICE
FAIR HAVEN, VT.

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BOSTON, MASS., 746 Tremont Building
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DETROIT, MICH., 12741 Birwood Avenue
HARTFORD, CONN., 53 Homestead Avenue
KANSAS CITY, MO., 1730 Grand AvenueMONTREAL, CANADA, 712 St. Maurice Street
NEW YORK, N. Y., 103 Park Avenue
PHILADELPHIA, PA., 1722 Sansom Street
PITTSBURGH, PA., 319 Fifth Avenue
ST. LOUIS, MO., 3423 Big Bend Boulevard
WASHINGTON, D. C., Bond Building**"EVERYTHING IN VERMONT SLATE"****Services**

Architects are invited to use our Main Office or Branch Offices for specialized service, such as furnishing roof and floor layouts, with estimate of costs when

desired, or assistance in designing and specifying slate for roofs, terraces, floors, etc.

Catalogs, samples and color plates supplied on request.

Allenstone Structural Slate

Vermont Unfading Green Slate is one of the foremost stones used for architectural and engineering work on account of its strength and durability. Recent tests of this slate prove that our Unfading Green for door saddles, window stools, treads, platforms, closet enclosures, etc., is harder and less absorbent than any other grade of slate quarried for structural purposes. Subjected to a modified Dorry test, this slate showed a hardness of 15.16, an approximate abrasive hardness 75% greater than other slate commonly used for the same purposes. Our Unfading Purple and Unfading Mottled Green and Purple are attractive colors combining admirably with Unfading Green and testing favorably for structural work.

Tests of Unfading Green Slate for non-absorbent qualities showed that this slate absorbed approximately 12/100 of one per cent of its weight, thus proving that

where low porosity is essential our material ranks favorably with all natural stone.

The beautiful natural colors of Vermont Slate blend in the natural rock, and there are no veins or ribbons that in any way weaken the physical structure of the material.

Allenstone Flooring and Flagstones

Our installations of colored slate for floors, terraces, swimming pools, walks, etc., have proven of real value through years of service. Modern equipped mills, experienced workmen, and many quarries guarantee prompt shipments and accurately fabricated material.

Allenstone Roofing Slate, Architectural and Commercial

The ultimate appearance of a Vermont Slate roof depends considerably on the care exercised by the manufacturer in selecting slate as specified by the architect. We guarantee to supply slate exactly according to specifications, *with or without certificate.*

Residence of Mrs. Harriet
Edgerton, Castleton, Vt.
Built in 1852

Natural slate blocks of various colors used in the construction of this residence and original Vermont slate roof is in excellent condition



Approved by Investigating Committees of Architects and Engineers—Ralph Moreton Hooker, Secretary

MEMORANDA

A. W. CAMPBELL

Manufacturers of Snow Guards for Roofs

1315 Main Street
HARTFORD, CONN.

Products

"CAMPBELL" PATENTED SNOW GUARDS for slate, tile, and other steep roofs.

"Campbell" Patented Snow Guards

The "Campbell" is a positive snow guard that stays put and will not break, bend nor wear out. It is made of pure copper and will last as long as the building upon which it is installed.

An especially valuable feature of the "Campbell" snow guard is that it can be installed on roofs already laid, without breaking or removing slates.

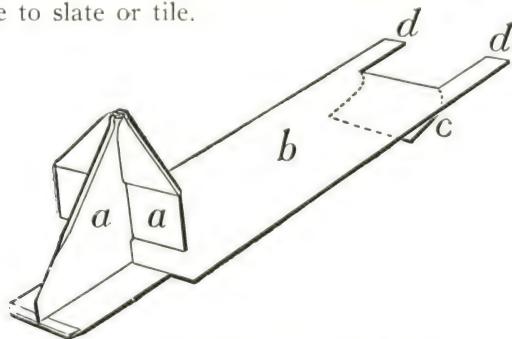
Construction Details

The snow stop or guard head (a) is so designed and constructed that it can not bend or collapse under the weight of the snow or ice.

The broad, flat, thin supporting strap (b) gives a distributed bearing, does not lift the slates and positively will not cause them to break.

The hook end (c) on the supporting strap is broad and will not split nor injure the slates and stays put.

The figures (d) on the hook end are designed for quick and easy installing on roofs already slated without damage to slate or tile.



Number of Guards to Set, Per Square

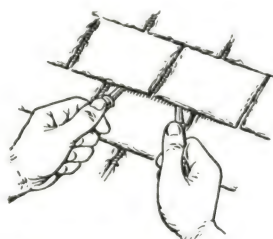
This varies according to the size of the slates, pitch of the roof and special needs.

For graduated, random slate roofs, space the guards from 16 to 24 in. apart horizontally and so spaced up and down as to properly stagger in alternate courses. The following table is worked out by this method:

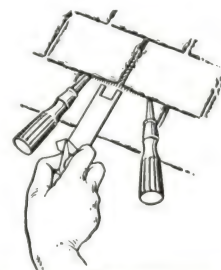
Size of slate, in.	Guards required per square	Where to place guards	
		Horizontally	Perpendicularly
12x6	60	Every 3rd slate	Every 3rd course
12x7	50	Every 2nd slate	Every 5th course
12x8	40	Every 3rd slate	Every 3rd course
14x7	45	Every 2nd slate	Every 4th course
14x8	40	Every 3rd slate	Every 3rd course
14x10	35		
16x8	30		
16x9	60	Every 2nd slate	Every 2nd course
16x10	55		
16x12	45		
18x9	50		
18x10	45		
18x12	40		
20x10	40		
20x12	35		
22x11	35		
22x12	30		
24x12	30		

Directions for Installing

The only tools required are two screwdrivers. Push a screwdriver under the butt of the slate at each side of the joint where the guard is to be installed. Then



First Operation



Second Operation



Finished and in Place

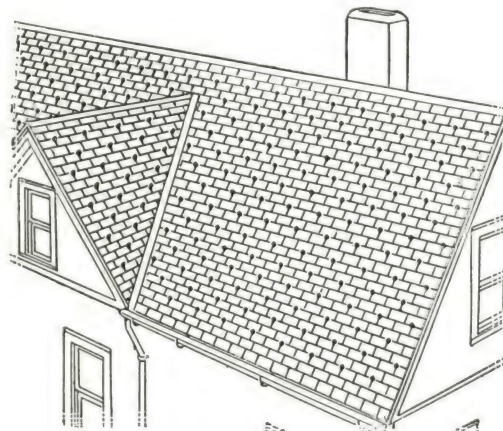
push the guard into place, remove the screwdrivers and continue with the succeeding guards in a like manner.

If the guards are securely hooked on the slates no staging will be required after the first course has been installed.

Start installing at the eaves and work up to the ridge, using the guards as a foothold to work on. However, as a precaution, it is well to have a rope or plank.

Architects' Specifications

Install "Campbell" Patented Snow Guards, as manufactured by A. W. Campbell, Hartford, Conn., spaced not more than 24 in. nor less than 16 in. apart, and so spaced up and down that they will properly stagger in alternate courses.



Spacing of Snow Guards on Typical Roof

THE M. N. CARTIER & SONS CO.

Only Manufacturers of Clason Wire Snow Guard for Roofs

Cartier Building, 275 Canal Street
PROVIDENCE, R. I.

Products

WIRE SNOW GUARDS for slate, tile, asbestos shingle, metal and other steep roofs.

Their Purpose

To lessen chances of damage suits against owners of property by increasing both personal and property safety.

There are many buildings so situated that the use of snow guards is essential to personal safety; there are more cases where the use of snow guards could protect the surrounding roofing and sheet metal work against costly damages.

Sliding snow and ice often injure roofings, and puncture or tear away gutters, etc. The use of our snow guards forestalls these dangers, as they hold the ice and snow where they form. They are a cheap and unobtrusive preventive against damage.

Important Notation

We note a growing tendency to permit the installation of three, four, or five courses of snow guards near the roof eaves. The result is that a few guards are compelled to hold not only the weight of snow and ice which they are located to care for, but also to withstand the tremendous tearing force of slides starting from the roof surfaces above.

No guards will withstand such conditions, and their installation in such a manner precludes the *purpose* for which they are used. When specifying our guards please do so according to our table and *insist* upon the roofer following the specification.

Manufacture

We make our guards in our own plant, and are not dependent upon the facilities or services of others. These guards are manufactured either from pure copper wire or galvanized steel wire, both selected for ductility and stiffness. No copper-covered steel wire is used.

Practicality

Our wire snow guards combine strength, long service, economy and unobstructive design.

Types of "Clason" Snow Guards

- New roofs, 1 and 2-in. points.
- Hook and friction for old roofs.
- Solder-to-metal-roof.
- Special for Spanish tile.
- Special for asbestos shingles.
- 2-in loop and 2-in. point "Clason" Snow Guards for flat tile and thick slate roofs.

The "Clason"

The "Clason" has been used for many years and has given uniformly satisfactory service; it is one of the strongest guards made.

Note from the illustration that the "butterfly" loops brace and strengthen each other, while the extension brace lends additional strength.



"Clason" Snow Guard for New Roofs

Number Per Square

The following table gives the approximate number of snow guards which may be safely specified for use in each 100 sq. ft. of roof surface:

ROOF PITCH	NUMBER OF GUARDS
One-quarter	50
One-third	75
One-half	125

Towers, and steeper roofs than above indicated, may require special consideration.

How to Specify

Apply to all pitched roofs "Clason" [for old roofs "Clason Special"] Snow Guards, as made by THE M. N. CARTIER & SONS CO., Providence, R. I. The guards to be made from pure copper [galvanized steel] wire. (Here specify the number of guards required per square, dependent upon the pitch of the roof and other special conditions.)

In applying the snow guards, the eaves course of the roofing material shall be laid as usual, but the next course shall be laid with the joints slightly open to receive the shank of the snow guard.

After striking the line for the third course of the roofing material, place the guards in the joints, with the loop just below the lap of the course, and drive the prong into the roof decking; then lay the course, leaving only the loop exposed.

Care must be used to insure having the shank well sunk into the joints, so that the following course of roofing material will lie flat and not bear upon the guard.

(Note: The architect or engineer may omit at his discretion the method of application of the guards.)

DAVID LEVOW

Manufacturers of Snow Guards, Leader Straps, Skylight Gearing, Roof Strainers

TELEPHONE
CHelsea 3-2400

308 West 20th Street, NEW YORK, N. Y.

ADJUSTABLE PIPE SNOW GUARDS

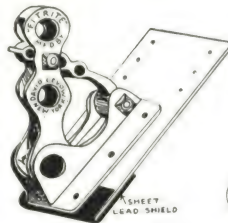
"Fitrite" Adjustable Pipe Snow Guards

Made of galvanized malleable iron and bronze for roofs of slate, Spanish tile, and special design shingles.

Size of Plate—"Fitrite" Snow Guard plates are the same size as slate, and are $\frac{1}{8}$ -in. thick for standard No. 1 slate, unless otherwise specified.

Application and Installation—Adjustable to any pitch. To be used with three (3) galvanized iron or brass pipes, $\frac{3}{4}$ -in. I.P.S. (1.05 in. o.d.). "Fitrite" Pipe Snow Guards are installed along eaves of roof, placing brackets 5 or 6 ft. apart. Plate takes the place of slate and is fastened with wood screws or nails.

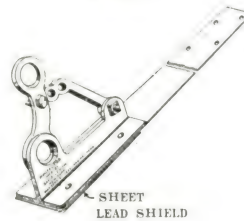
Features—Underside of snow guard is lined with a special sheet lead shield, which prevents sharp edges of plate from coming in contact with slate and eliminates the possibility of cracking or breaking of slate. Shield is so attached that rivets do not come in contact with slate.



"Fitrite"
Type
3 Pipes

Below:

"Protector"
Type
2 Pipes



Adjustable to Pitch of Roof

"Protector" Adjustable Pipe Snow Guards

Especially designed for residential or other small buildings with slate roofs having rafters not over 18 ft. long.

This 2-pipe guard has all the features of the "Fitrite" type so popular for many years on larger buildings. Made of bronze with lead shield and copper plate 2-in. wide by $\frac{1}{8}$ -in. thick, for two (2) brass pipes $\frac{1}{2}$ -in. I.P.S. (.084 in. o.d.).

"Protector" Snow Guards, with 24-in. long plates, are placed 5 to 6 ft. apart. The bracket is set over one of the lower rows of slate and nailed through top holes in plate directly to roof boards with heavy copper screw nails. Next row of slate goes over the plates.

Short Specification

All slate roofs shall be provided around eaves with ["Fitrite" Adjustable Pipe Snow Guards] ["Protector" Adjustable Pipe Snow Guards] as manufactured by DAVID LEVOW, 308 West 20th Street, New York, and installed in accordance with the manufacturer's instructions.

(Note: Detailed specification furnished on request.)

(Specifications for Mission, Spanish or Shingle Tile are the same as for slate roof, except mention kind of tile to be used.)

A Few Recent Installations of Adjustable Pipe Snow Guards

(BUILDING, LOCATION AND ARCHITECT)

†Hotel Pennsylvania, New York, N. Y., McKim, Mead & White
†Metropolitan Life Insurance Co., Sanitarium, Mt. McGregor, N. Y.,
D. Everett Waide
U. S. Post Office, Brooklyn, N. Y.
†Temple Emanu-El, Fifth Avenue, New York, N. Y., Robert D. Kohn
†Kings County Hospital, Brooklyn, N. Y., LeRoy P. Ward, Inc.
*St. Joseph School, Maplewood, N. J., McKenna & Irving
Ridgewood High School, Ridgewood, N. J., Fanning & Shaw
St. Michael's Church, Amsterdam, N. Y., Morgan & Millaman

Roosevelt High School, Yonkers, N. Y., C. Howard Chamberlain
Howard University, Washington, D. C., A. I. Cassell
Museum of Natural History, N. Y., Trowbridge & Livingston
U. S. Government Theatre, Mitchell Field, Long Island, N. Y.
War Department Theatre, Fort Riley, Kan.
Veterans Hospital, Oteen, N. C.
‡Crippled Children's Home, Port Jefferson, L. I., N. Y., E. J. Berlenbach
Model Home, Elizabeth, N. J., C. Godfrey Poggi
*Mission Tile. †Metal Roof. ‡Spanish Tile

"FITRITE" BRONZE BEEHIVE STRAINERS

For Outside Leaders

Material and Sizes—Solid bronze. 3, 4, 5, 6, 7, and 8-in. diameter; also 3x4-in. square.

Features—Solid cast bronze strainer. Practically unbreakable. Will last for the life of the building.



Specifications—All outside leaders shall be installed with "Fitrite" Bronze Beehive Strainers of the proper size as manufactured by DAVID LEVOW, 308 West 20th Street, New York, N. Y.

"FITRITE" HINGED BRONZE LEADER STRAPS

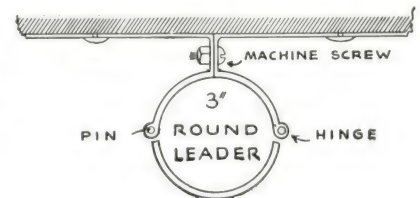
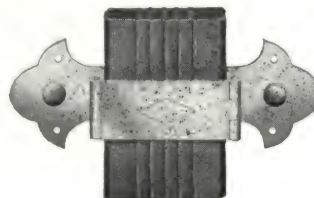
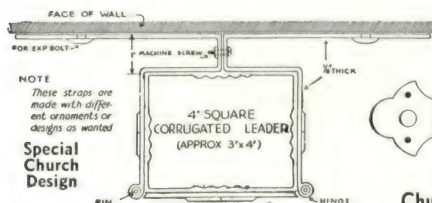
Material—Made in solid cast bronze. Heavy construction makes its use especially desirable where permanence is essential.

Sizes—Made for 3- and 4-in. round or corrugated pipe. Also for 3x4-in. square corrugated pipe and any special size to order. Straps can be furnished with cross, initials or other ornamentation, if desired.

Installation—To be fastened to wall with four expansion bolts. (Holes in straps are properly spaced for brick joints). When installed, pipe remains 1 in. from face of building.

Features—Right side of strap is permanently hinged. Left side has loose-pin which permits removing leader for replacement without taking strap from wall. Strap is so constructed that machine screw can be adjusted to take care of variations in size of pipe and assures leader being held firmly in position.

Specifications—All leaders or conductor pipes shall be fastened to wall with "Fitrite" Hinged Bronze Leader Straps, of the proper size, as manufactured by DAVID LEVOW, 308 West 20th Street, New York, N. Y.



THE EDWARDS MANUFACTURING CO.

Manufacturers of Metal Tile and Metal Shingles

403-413 Culvert Street
CINCINNATI, OHIO

NEW YORK, N. Y., 381 Fourth Avenue
(Metropolitan Area Only)

DALLAS, TEXAS, Market and Collins Streets
(Texas Only)

Authentic Roofing Type

This Metal Tile is an authentic roofing type. The Romans gave us the first metal tiles—casting them from bronze. Next, these metal tiles were curved, the first course being laid with the roll down and covering the joints with tiles laid roll up, as on the circular temple of Vesta made from Syracusan Bronze. One of the Popes took tiles of this kind from several of the temples and covered the Basilica of St. Peter. Since the tenth century, lead and copper tiles of similar construction were used, particularly on the domes of Moscow and churches in Belgium and Germany. Edwards Spanish Metal Tile capitalized modern metal stamping equipment to provide a roof retaining all the beauty and massiveness of the old Moorish clay tile and at the same time overcoming some problems which it presents.

Materials

Fabricated from Copper, Copper-bearing Galvanized Steel, Galvanized Tight-cote Steel, Tin (terne) Plate and Pure Sheet Zinc, all the above in any weight or gauge desired. Since metal is universally used to protect the structure at the weakest points of the roof—valleys, ridges, flashings, etc.—it is consistent to utilize it for the entire roof providing it is available in the proper form or design which will beautify as well as protect.

Advantages

- (1) The only tile roof which is watertight in itself. Patented construction of interlocking joint provides perfect protection against elements, extreme ease of application, allowance for expansion and contraction.
- (2) Edwards Metal Spanish Tile do not freeze, crack, or fall off due to climate changes.
- (3) These tile do not absorb moisture which normally increases the weight of tile roofs of absorbent materials about 25%.
- (4) Edwards Metal Tile is light in itself, about one-ninth the



Fig. 367
Field Tile

weight of clay tile, permitting much lighter framing and decreasing costs of laying.

(5) Makes the coolest roof by far as the metal radiates rapidly through the constant movement of air in the rolls. This movement is accentuated as the heat increases, thereby cooling the roof and the building.

Fixtures

Illustrations below show only a few of the many fixtures made to take care of different and special conditions. (See Catalog 72 for complete line of fixtures.) Illustrations show bungalow fixtures. Regular and Chinese fixtures also available. Illustration of roof section is scarcely large enough to show the variety of fixtures which embellish and beautify this roof treatment.

Engineering Service

Either send us the blueprints or a sketch showing the pitch, shape and dimensions of the roof, and our Engineering Department will furnish a list of the tile and fixtures required, together with quotation including freight to the railroad point nearest to site of building. Full directions will be furnished for application of tile and fixtures.

Specification

All pitched roof surfaces shall be covered with Edwards Metal Spanish Tile, manufactured by THE EDWARDS MANUFACTURING Co., Cincinnati, Ohio, to be made from.....

(Insert here: Tin Painted, Tight-cote Galvanized, No. 9 or No. 11 Galvanized Zinc, 9, 12 or 14-oz. Copper. If Painted, specify whether red or green.) Roof surfaces to be covered with felt or building paper. Tile to be applied straight and true so all horizontal lines are parallel with the eaves and all vertical lines are at right angles to the eaves. Fixtures shall be.....

(Insert here: Regular, Bungalow, or Chinese.)

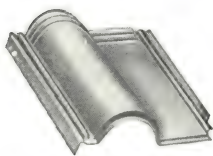


Fig. 400
Gable Tile



Fig. 425
Hip Flashing
—Left

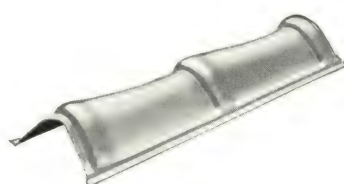


Fig. 790
Ridge and Hip Finish



Fig. 424
Hip Flashing—Right



Fig. 269
Diverting Tile

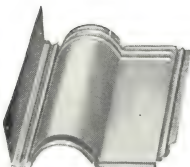


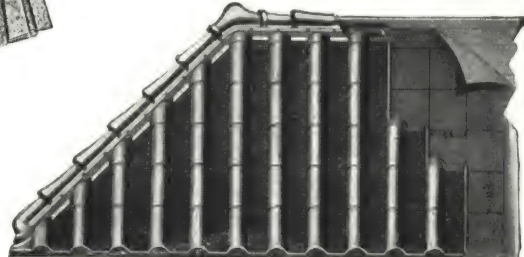
Fig. 399
Side Wall Tile



Fig. 381
Valley



Fig. 409
Ridge Flashing



Section of roof with Edwards Spanish Tile



Fig. 417
Left
Valley Tile



Fig. 416
Right
Valley Tile

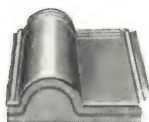


Fig. 369
Eave Tile

Write for Catalog 72 for fixtures for all points on roof and complete specifications.

B. MIFFLIN HOOD COMPANY

Manufacturers of Roof and Floor Tiles, Face and Chemical Brick

PLANTS

DAISY, TENN., AND NORWOOD, N. C.

TELEPHONE OR TELEGRAPH, County 5606, Chattanooga, Tenn.

BRANCH SALES OFFICES

ATLANTA, GA., 686 Greenwood Avenue, N. E.
BOSTON, MASS., 80 Holton Street, Brighton, Mass.
CHATTANOOGA, TENN., P. O. Daisy, Tenn.
CHICAGO, ILL., 2347 E. 70th Place, and 5751 No. Campbell Avenue
MIAMI, FLA., 1720 Congress Building

NEW YORK, N. Y., 101 Park Avenue
NORWOOD, N. C.
PHILADELPHIA, PA., Hood Tile Co., DeLong Building
TAMPA, FLA., 310 So. Morgan Street
WASHINGTON, D. C., care Chas. S. Salin Co., 1015 15th Street, N. W.

Represented by Leading Roofers, Tile and Brick Dealers in Principal Cities

Products

An authentic ROOFING TILE for any type of architecture. Flat Shingle Tile, True Mission Tile, Tapered Mission Tile and Interlocking Shingle Tile.

Also manufacturers of brick of standard colors, shapes and textures. Fireplaces, Steps, Briquettes, Landscape Tile, Garden and Terrace Tile, Heavy Traffic Tile, Non-Slip Ramps, Brick and Stucco Inserts, Chemical Stoneware, Cylindrical Spiral Rings.

For our Floor Tile Page, see File Index.



Shingle Tiles

"Fighting Cocks Tavern"—Hand-moulded in true reproduction of old European handmade tiles. Antique colors including soot black, moss greens, browns and soft shades of red. Soft texture, with irregular butts.

"Yorkshire"—Sanded texture, in extreme wide range of antique colors. An excellent tile for color graduation.

"Normandy"—Made from soft alluvial clays, especially adaptable to the warm climates. Smooth but non-light reflecting texture, in cool buff and tan colors.

"Devonshire" (rough scored texture) or "Sussex" (smooth)—Hardburned shale tile, made in red, fire-flashed and buff shades. "Devonshire" is also produced in Moss Mottle green shades, and "Sussex" can be furnished in a range of slate colors.

"Dresden"—A side-locking shingle, with scored texture. Red and fireflashed colors. Also made in Moss Mottle green shades.

"Sussex"—A thin but strong hard shale tile produced in dark sprayed slate colors, as well as the regular red and fireflashed shades. Light weight and economical.

Curved Tiles

"Barcelona"—A true handmade tapered Mission tile, made in moulds from alluvial clays and shale in a wide range of clay colors. Has a soft sanded and pitted texture.

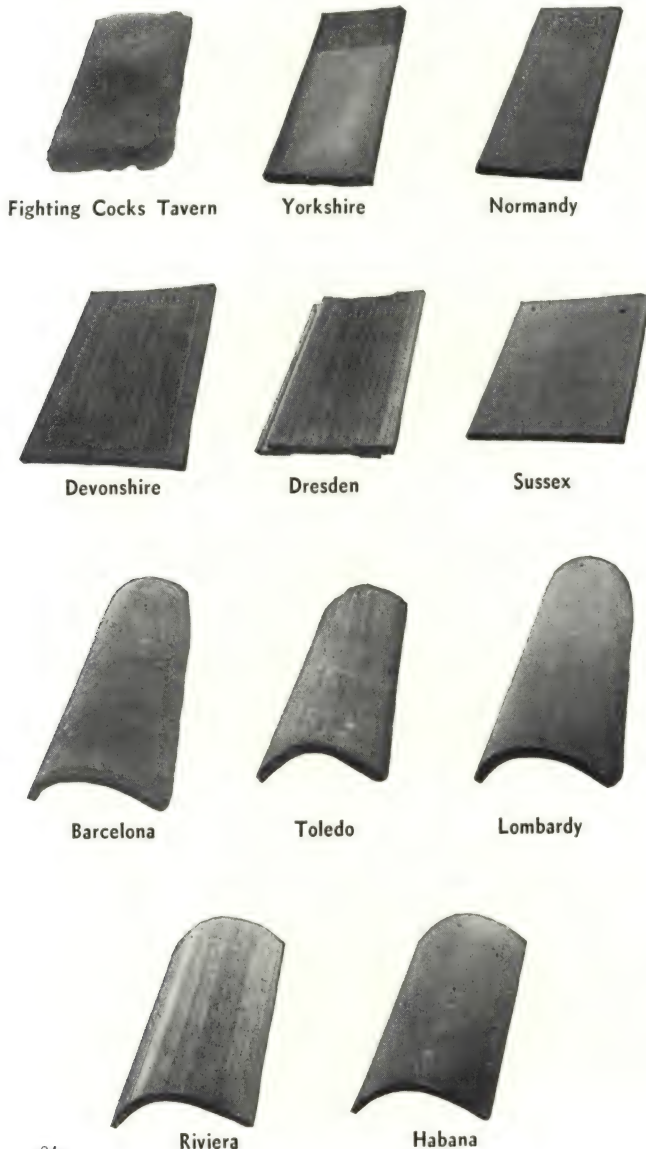
"Toledo"—A handmade 15-in. Tapered Mission, made of alluvial clays, with a hand-raked texture and wide range of clay and engobe colors.

"Lombardy"—Machinemade Tapered Mission, with smooth die surface and non-reflecting clay colors.

"Riviera"—Straight barrel Mission, made from shale, in either Rough scored, Smooth or lightly scored Needlepoint texture. Produced in wide range of Red, Fireflashed and Buff shades.

"Habana"—Straight barrel Mission, made from alluvial clays. Smooth texture only. Buff and Tan colors.

Samples cheerfully furnished upon request.



Name	Size, inches	Exposure to weather, inch	Pieces per square	Weight per square, lbs.
"Fighting Cocks Tavern" ..	7x14x 1/2	6	355	1500
"Yorkshire"	6x15x 1/2	6 1/2	380	1550
"Normandy"	6x15x 1/2	6 1/2	380	1550
"Sussex" or "Devonshire"	9x12x 1/2	5	335	1600
.....	9x15x 1/2	6 1/2	260	1450
.....	7x15x 1/2	6 1/2	325	1350
.....	6x15x 1/2	6 1/2	380	1550
"Dresden"	8x13	10	215	1000
"Sussex"	9x15x 3/8	6 1/2	260	1150
"Barcelona"	18x8	15	170	1150
"Toledo"	15x7	12	280	1500
"Lombardy"	18x8	15	170	1150
"Riviera"	15x8	12	210	1100
"Habana"	18x8	15	170	1100

LUDOWICI-CELADON COMPANY

Makers of "Ludowici" Roofing Tiles

NEW YORK, N. Y.
CLEVELAND, OHIO

104 South Michigan Avenue
CHICAGO, ILL.

WASHINGTON, D. C.
OKLAHOMA CITY, OKLA.

AUTHENTIC IN EVERY DETAIL, LUDOWICI TILES FAITHFULLY REPRODUCE THE EFFECT OF OLD WORLD ROOFS

Products

LUDOWICI ROOFING TILES.
LUDOWICI CHIMNEY POTS.
LUDOWICI GARDEN WALK EDGING.
LUDOWICI TILE SLABS.
LUDOWICI TILE FLAGGING.

Manufacture

From the Ludowici clay pits of Ohio and Kansas come the finest clays obtainable. These clays, under our special manufacturing methods, produce hard-burned roofing tiles of non-reflective texture, whose soft, rich colors are obtained in the burning process—hence are permanent.

Texture

Ludowici Shingle Tile reproduce with historic accuracy the crude, rugged charm of the French farmhouse and the English countryside roofs, and give the required feeling of weight your design demands. The Colonial shingles reproduce in every detail the texture and color of old, hand-split wood shingles.

Closed Shingle, English Shingle, Mission, Spanish, Roman, Italian, and Greek tiles are also produced in various textures, including weathered surface effects.

Variations in great number, both as to color and texture can be had to meet the individual requirements of architectural design and taste.

Colors

Ludowici Shingle tiles are produced in a wide variety of colors, ranging from light tans and buffs through varying reds, browns and purples, to greys, brownish blacks and dark weathered greens.

Ludowici Spanish, Mission, French, English Shingle, Closed Shingle, Roman, Italian, and Greek tiles are offered in natural reds and fireflashed shades, or glazes of most any color.

Permanence and Durability

A roof of Ludowici tiles will last as long as the building it covers. Once laid, it provides a permanently beautiful, weathertight and fireproof roof, with distinct insulating qualities; assures lifelong protection without the expense of painting or repairs.

Reasonable in Cost

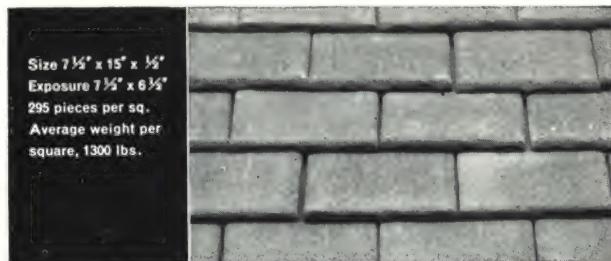
A Ludowici tile roof is moderate in price, and can be installed without any special framing for the substructure.

Service to Architects

We invite you to write or call your nearest Ludowici representative for samples of tile, complete specifications, and for aid on any roofing problem you may have. Estimates promptly furnished from architects' complete plans and specifications.



Provincial Shingle



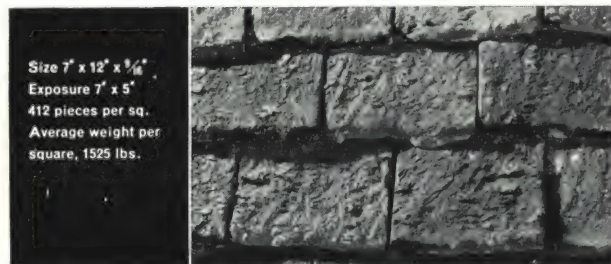
Size $7\frac{1}{2}'' \times 15'' \times \frac{1}{2}''$
Exposure $7\frac{1}{2}'' \times 6\frac{1}{2}''$
295 pieces per sq.
Average weight per square, 1300 lbs.

Brittany Shingle



Size $7'' \times 12'' \times \frac{3}{4}''$
Exposure $7'' \times 5''$
412 pieces per sq.
Average weight per square, 1650 lbs.

Antique Shingle



Size $7'' \times 12'' \times \frac{3}{4}''$
Exposure $7'' \times 5''$
412 pieces per sq.
Average weight per square, 1525 lbs.

Colonial Shingle



Size $7'' \times 15'' \times \frac{3}{4}''$
Exposure $7'' \times 6\frac{1}{2}''$
317 pieces per sq.
Average weight per square, 1600 lbs.

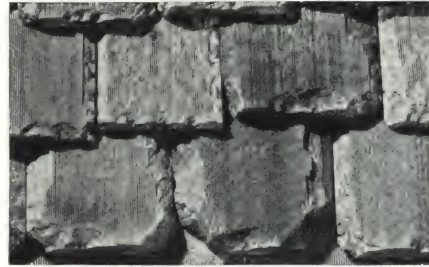
Norman Shingle

Size 7" x 12" x 5/8"
Exposure 7" x 5"
410 pieces per sq.
Average weight per
square, 1360 lbs.



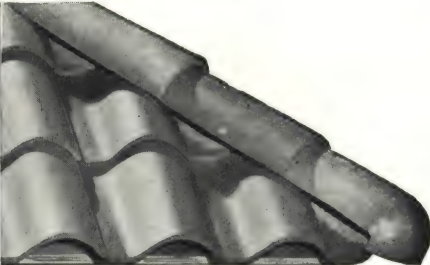
Yale Memorial Tile

Standard Sizes:
Lengths 12", 14", 16"
Widths 6", 7", 8"
Thicknesses 3/4",
3/4", 1". Exposure
and weight varies
according to the
size of tile used.



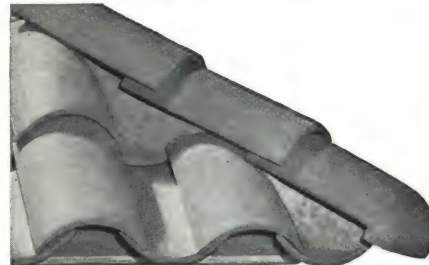
Spanish

Size 13 1/4" x 9 3/4"
Exposure 10 1/4" x 8 1/4"
171 pieces per sq.
Average weight per
square, 850 lbs.



Straight Barrel Mission

Lengths, 18", 14 1/4"
Exposures 15" x 11 1/2"
and 11 1/4" x 11 1/2".
18" length 166 pieces
per sq. Wt. 1200
lbs. 14 1/4" length
224 pieces per sq.
Weight, 1225 lbs.



Cubana Tapered Mission

Size 18" x 11 1/4"
Exposure 15" x 11 1/4"
170 pieces per sq.
Average weight per
square, 1300 lbs.
18" Straight Barrel
Mission Pans.

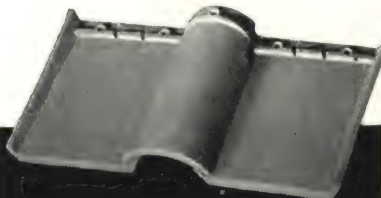


18-in. Tapered Mission

Size 18" x 10"
Exposure 15" x 10"
192 pieces per sq.
Average weight per
square, 1300 lbs.
18" Straight Barrel
Mission Pans.

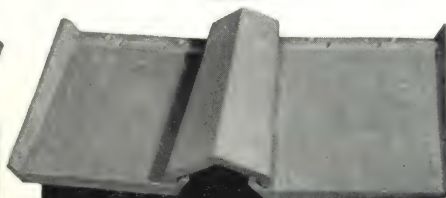


Roman



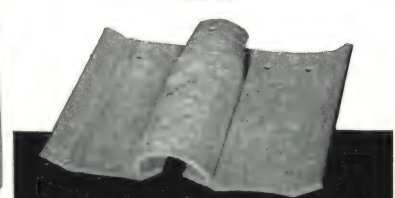
Made in two sizes: 10" x 12" exposure, 240 pieces
per sq.; 15" x 19" exposure, 102 pieces per sq.
Wt., small size, 1150 lbs.; large size, 1400 lbs.

Greek



Made in two sizes: 10" x 12" exposure, 240 pieces
per sq.; 15" x 19" exposure, 102 pieces per sq.
Wt., small size, 1285 lbs.; large size, 1450 lbs.

Italian



Size of tile width 11 1/4" x length 12 1/2";
Exposure 9 1/4" x 11 1/4", 276 pieces per square.
Average weight per square is 1350 pounds.

LUDOWICI CHIMNEY POTS FOR USE WITH WEATHERED-EFFECT TILES

Chimney pots are made to fit standard flue linings. They are available in various textures and colors, with glazed or unglazed finish.



C.P. 200



C.P. 300, 310, 320

STANDARD STOCK SIZES

NUMBER	FLUE	BASE	HEIGHT
C.P. 200	7 1/4" x 7 1/2"	13" x 13"	15"
C.P. 300	8" Diam.	14"	18"
C.P. 310	12" Diam.	18"	21"
C.P. 320	15" Diam.	21"	25"
C.P. 400	8" Diam.	14 1/2"	25"
C.P. 410	12" Diam.	18 1/2"	29"
C.P. 420	15" Diam.	21 1/2"	32"
C.P. 500	8" Diam.	14"	15"
C.P. 510	12" Diam.	18"	18"
C.P. 520	15" Diam.	21"	22"
C.P. 600	10" Diam.	13"	15"
C.P. 610	12" Diam.	15"	18"
C.P. 620	15" Diam.	18"	20"
C.P. 630	18" Diam.	21 1/2"	23"
C.P. 640	23" Diam.	26"	30"
*C.P. 650	8" x 12"	11" x 15"	20"
*C.P. 660	12" x 17"	15" x 20"	30"

*Elliptical.



C.P. 400, 410, 420



C.P. 500, 510, 520

C.P. 600, 610, 620,
630, 640, 650, 660

MINERAL WELLS CLAY PRODUCTS CO.

MINERAL WELLS, TEXAS

PRODUCTS

Tiles

ROOFING TILES, PAVING TILES, HOLLOW BUILDING TILE, DRAIN TILE.

Standard Shingle Tile are made in two machine made textures and one hand finished textures. They are 7x15x1½ in. in size. Standard Straight Barrel Mission Tile are machine made.



Eaton

Rough Combed, exposure 7x6½ in., 330 pieces per square, weight 1350 lbs.



Avon

Needle Point, exposure 7x6½ in., 330 pieces per square, weight 1350 lbs.



Brighton

Hand Worked, exposure 7x6½ in., 330 pieces per square, weight 1500 lbs.

Brick

PAVING BRICK, FACE BRICK, SANDED COLONIALS.

Materials

Manufactured of high grade shales and clays as found and mined in this locality.



Madrid

Rough Combed, 8x16 in., exposure 14 in., 200 pieces per square, weight 1300 lbs. Also in 17-in. tapered barrel mission.



Supremo

8x18 in. in size, exposure 15 in., 160 pieces per square, weight 1200 lbs. Hand made.



Piedmont

Needle Point, 8x16 in. in size, exposure 13 in., 190 pieces per square, weight 1100 lbs.

MURRAY TILE COMPANY

INCORPORATED

Manufacturers of Roofing, Quarry and Promenade Tile
CLOVERPORT, KENTUCKY

SALES REPRESENTATIVES

ROOFING

CHICAGO, ILL., F. A. Doerr, 7 So. Dearborn St.
MIAMI, FLA., H. J. Pilliod, 645 N. E. First Ave.
NEW YORK, N. Y., C. H. Vanderlaan, Inc., 103 Park Ave.
ST. LOUIS, MO., R. V. Hughes, 1123 Washington Ave.

QUARRY

CHARLOTTE, N. C., E. V. Garraux, 2005 Greenway
DALLAS, TEXAS, R. M. Jacks, 611 Construction Bldg.

CHICAGO, ILL., Jos. A. D'Eath, 1500 South Western Ave.
CINCINNATI, OHIO, J. A. Morton, 3535 Larkspur Ave.
DETROIT, MICH., C. F. Beckwith, 14264 Coyle Ave.
INDEPENDENCE, MO., E. C. Lefman, P. O. Box 16.
LOS ANGELES, CAL., Cambridge-Wheatley Co., 910 No. Orange Drive
MIAMI, FLA., H. J. Pilliod, 645 N. E. First Ave.
NEW YORK, N. Y., C. H. Vanderlaan, Inc., 103 Park Ave.
ROCHESTER, N. Y., J. C. Halpin, 54 Thorndyke Road
SAN FRANCISCO, CAL., Cambridge-Wheatley Co., 1155 Harrison St.

Products

SPANISH ROLL ROOFING TILE, MISSION ROOFING TILE and FLAT SHINGLE ROOFING TILE.

QUARRY TILE and TRIM, for Floors, Wainscots and Promenade Roofs, Stair Treads and Risers, Threshold Tile, Window Stools and Returns, Plinth Blocks.

PACKING HOUSE HEAVY DUTY QUARRY.

Murray Tiles

Produced since 1904 from quality shales and clays; hard-burned, weatherproof, fireproof, acidproof and stainproof. Manufactured by modern methods in a variety of types, sizes, textures and appropriate colors.

Shingle Roofing Tile

Rough Velvet—Scored to produce rough yet velvety appearance. Full range solid and Fireflashed shades, Red, Buff and Brown. Size and weight 7 in. wide, 15 in. long, 317 pieces per square, 1300 lbs. per square with 6½ in. exposure.

Saxony—Furnished in plain, faintly scored surface, no scoring or hand-finished effect. Ends or sides not rounded or treated. Red, Brown and Fireflashed shades. Size: 7 in. wide, 15 in. long, ½ in. thick; 6½ in. exposure, 317 pieces per square, 1300 lbs. per square.

Rustic—Worn aged surface, uneven edges, irregular butts; slightly warped. Buffs, Reds, Browns and Blacks, with most popular color range red through reddish black into black. Size: 7 in. wide, 14 in. long, ½ to ⅝ in. thick, 6-in. exposure, 360 pieces per square. Weight: 1600 lbs. per square.

Curved Roofing Tiles

Mission Tiles—Straight barrel, 7¾x15, 7¾x18, 8¾x15 and 8¾x18-in. size, with exposures 6x12, 6x15, 7x12 and 7x15 in. Colors: Red, Buff, Brown or Fireflashed. Smooth or scored surfaces. Pieces per square: 200, 170, 180 and 150 pieces, respectively.

Spanish S Roll Tile—10½x13¼ in., exposure 8¼x10¼ in., 171 pieces per square. Colors: Red, Buff, Brown or Fireflashed. Smooth or scored surface.

Trimmings and Special Tile

Hips, Hip Starters, Ridges, Closed End Ridge, Terminals, Gable Rakes, Closures, and all necessary trimmings made in various styles to fit different types of roofs, including cut tile before burning for hips and valleys.

*Special Angles, Shapes and Sizes furnished to architects' specifications.

Additional Colors

Green and Black Slip Colors furnished for both shingle and curved roofing tiles; Bright Green Glazed colors for Spanish Roll roofing tiles.

Quarry Tile

Colors—English Red (bright), Tuscan Red (dark), Licorice Brown, Light Buff, Light Gray, Sunburst (variegated red fireflashed) and Golden Glow (variegated buff fireflashed in a wide range).

Grades—Standard—Solid and sound and first quality in every particular. Sorted to size and approximate uniformity of shade unless wide variation in color desired.

Second—Tile rejected from Standard Grade on account of slightly broken corners and chipped edges. May not have absolutely level surface or straight lines, but contain no cracks running into tiles.

Rubble Random or Cull Tile—Cracked or solid tile rejected from Second Grade.

Sizes—Plain Tile—

1¾x1¾x½ in.	1¾x4 x¾ in.	6 x9 x¾ in.
1¾x4 x½ in.	2¾x2¾x¾ in.	8 x8 x¾ in.
3 x3 x½ in.	2¾x6 x¾ in.	9 x9 x⅞ in.
3 x6 x½ in.	4 x4 x¾ in.	6 x9 x1 in.
4 x4 x½ in.	4 x8 x¾ in.	5¾x5¾x1 in.
1 x1 x¾ in.	4½x6 x¾ in.	5¾x12 x1 in.
1¾x1¾x¾ in.	6 x6 x¾ in.	12x12 x1 in.
		4 x8¼x¾ in.

Elongated Hexagons and Halves, 2¼x8x¾ in. Bricks.

Cove Base—2¾ in. high over all, 6 in. wide; 4¾ in. high over all, 4 in. wide; 4¾ in. high over all, 6 in. wide; 6 in. high over all 6 in. wide; 6 in. high over all, 9 in. wide. Both Round and Square Top.

Bullnose—Same sizes as plain tile.

Stair Treads—6x6x1¼, 6x12x1¼ and 9x10¼x1¼ in.

Stair Risers—9x6x1¼ in.

Thresholds—6x5x1⅝x1¼ in.

Window Stools—4¼x6x1½ in.

Wainscot Cap—2x6 and 4½x6 in.

Stair Tread Corners—6x6x1¼, 6x12x1¼ and 10¼x10¼x1¼ in.

Window Stool Returns—4¼x6x1½ in.

Plinth Blocks—6x5½ in. Beveled, and 6x4½ in. Flat.

Packing House Heavy Duty Quarry

This tile is made in English Red and Tuscan Red, 4x8x1½ in. in size, semi-vitreous to vitreous and impervious to moisture. Adapted especially for floors in packing houses, breweries, creameries, etc., where extremely heavy wear is encountered.

Specifications for application may be secured from manufacturer on request.

THE NEW HAVEN COPPER COMPANY

Manufacturers of Sheet Copper Since 1849

SEYMOUR, CONN.

KENMAR COPPER SHINGLES

Kenmar Copper Shingles (U. S. Patent No. 1,971,932) combine all the well-known and desirable properties of sheet copper with the ease of application, economy and beauty of design inherent in a roofing material in shingle form.

Kenmar Copper Shingles are made of pure sheet copper ribbed or corrugated, with the ribs running lengthwise of the shingle. The bottom edge of the shingle is made in the form of a roll which gives to the shingle the appearance of the thick butt of wood, slate or tile shingles. It also has the advantage of acting as a snow guard, thus eliminating the necessity of using snow guards on sloping roofs.

These attractive copper shingles are applied to a roof as easily as, and usually in less time than, wooden shingles. Anyone who can lay wooden shingles can readily apply Kenmar Copper Shingles.

Durability

Copper offers a practical, permanent material for roofing. When properly laid, a copper roof will outlast the building it protects.

Ease of Application

Kenmar Copper Shingles are one of the easiest roofing materials to apply. They are nailed to the roof in the same manner as wooden shingles.

Economy

The cost of a roof of Kenmar Copper Shingles is no greater than that of the average good roof of other accepted materials. The first cost of a roof of Kenmar Copper Shingles is the last cost, because it eliminates the cost of replacement or maintenance and even has a salvage value years later if the building is demolished.

While the cost of laying per square will vary somewhat in different sections, the average labor cost is often less than for ordinary wooden shingles.

The weight of 100 sq. ft. laid with Kenmar Copper Shingles is less than half that of wood shingles. This light weight of the roof means that the weight of the structural timbers may also be cut down.

TABLE OF COMPARATIVE WEIGHTS

Material	Weight of 100 sq. ft. Laid
Clay Shingle Tile	1200—1800 lbs.
Clay Spanish Tile	650—850 lbs.
Slate	450—675 lbs.
Asbestos Shingles	300—650 lbs.
Wood Shingles	200—300 lbs.
Kenmar Copper Shingles (No. 30 Gauge)	95—116 lbs.

Protection Offered by Kenmar Shingles

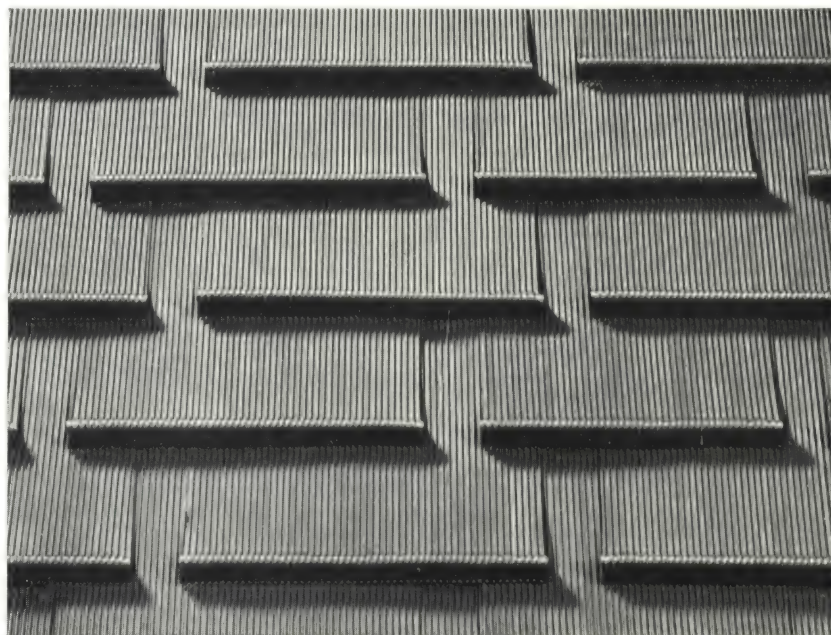
Fire Protection—More than one-fourth of all residential fires start on the roof. Copper, being fireproof and completely impervious to flying sparks, makes

Kenmar Copper Shingles a very real fire protection.

Lightning Protection—The electrical conductivity of copper is high, and when grounded, a roof of Kenmar Copper Shingles provides the best possible protection against lightning.

Weathertight

Kenmar Copper Shingles, if properly applied according to instructions and in conjunction with copper flashings, gutters, spouts, etc., give as near a permanently weathertight roof as it is possible to obtain.



Kenmar Copper Shingles

Aesthetic Values and Colorings

The use of copper in construction has high aesthetic value. It has been used for centuries in countries throughout the world. This has been due partly to the unusual color which copper takes when exposed to the weather. This color is in the form of a natural corrosion which also acts as a protective finish.

Many of the world's finest examples of architecture are enhanced by the distinctive color effects due to the use of copper as all or part of the roofing material. For centuries, the green patina which forms on copper on exposure to the air in many climates has been used by architects to secure the color effects on the roofs of their buildings not obtainable with any other material.

With the use of Kenmar Copper Shingles, various color effects of delicate greens, soft greys and rich browns of copper may be achieved for the roof of any size building—for even the small cottage.

Kenmar Shingles Are Available in Four Finishes

Natural Copper—Kenmar Copper Shingles are available in the natural copper which, after laying, will (on or near the sea coast) gradually turn to a bronze color and then, over a period of years, to a soft, delicately mottled green as the patina forms to protect the copper like an impervious paint.

Patinated—Kenmar Shingles are also available in this natural soft green at the time they are selected. A pre-weathering process simply speeds up the natural weathering process so that the green patina is formed on the copper shingle at the Kenmar laboratories.

Lead Coated—Kenmar Shingles are offered also, at a slightly higher cost, with lead-coating. This, when exposed to the weather, produces a soft grey tone similar to that of old lead roofs.

Oxidized—In sections of the country distant from the coast, natural copper weathers to a rich brown or bronze and maintains that color permanently.

Kenmar Copper Shingles are available in this rich brown through an oxidizing process at the factory, so

that this weathered effect is immediately obtainable as soon as laid.

Samples of Colors

We will be pleased to send a sample package of Kenmar Copper Shingles showing the actual colors mentioned above to any architect, contractor or home owner upon request.

Sizes and Weights

Sizes Available—Kenmar Copper Shingles are made of pure sheet copper in two weights—Nos. 30 and 32 B & S gauge. They are all 16 in. long and come in three widths—8, 10 and 12 in. The standard height of the rolled lower edge is $\frac{7}{8}$ in., but can be made in other heights on special order.

Weights Due to Spacing and Lap—With the standard 6-in. exposure of shingles in each course (as recommended in Specifications which follow), the weights per 100 sq. ft. laid will be approximately as follows:

Gauge	Weight of 100 sq. ft. Laid	
	2-in. spacing	4-in. spacing
No. 32 B & S Gauge	92 lbs.	76 lbs.
No. 30 B & S Gauge	116 lbs.	95 lbs.

NOTES ON LAYING OF KENMAR SHINGLES

All installation details covering copper flashings, gutters, downspouts, etc., and preparation for new or re-roofing jobs, including the suggestions below, conform to Standard Practices as recommended by the Copper and Brass Research Association; while details of actual laying of Kenmar Copper Shingles conform to standard practice for laying of ordinary wood shingles.*

Preparation—New Work: One layer of 15 lb. roofing felt or other insulating material shall be laid over the sheathing before laying shingles. **Old Work:** When laying over old wood shingles, felt may be omitted and bevelled wood strips used to fill up steps in old shingles.

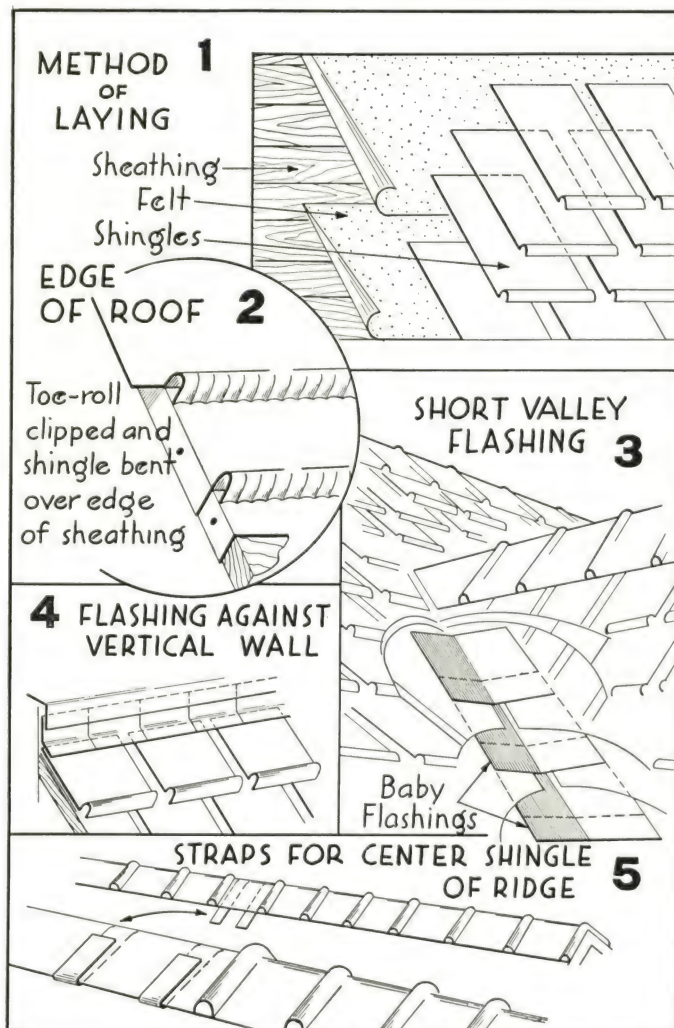
Flashings—For long valleys, against vertical wall surfaces, eaves, etc., follow the standard practice for copper flashings as employed by experienced sheet metal contractors.

Short Valleys, Dormers, etc.—These may be flashed with "shingle flashing" crimped like the shingles but with no toe, and laid with same lap and spacing as shingles. See detail sketch. **Against vertical wall:** Where shingles run up to a vertical wall surface, "Baby Flashings" of crimped shingle copper should be woven into the shingles at least 3 in. and turned up the wall at least 6 in. to form a base flashing. These can be obtained from the Company. This should then be covered by a standard cap flashing, which must lap the base flashing at least 3 in. at all points. This cap flashing should be placed *before* the final outside wall covering is applied.

Hips—Center of lower edge of shingle can be bent inward and the shingle then bent to conform to the hip.

Ridge Poles—Standard copper ridging or ridge caps can be used. Or shingles bent as for hips can be used. Start at both ends and work toward the center. Instead of nailing through the last shingle, this shall be secured by two straps of heavy gauge copper, previously nailed across ridge and long enough to bend up over edge of shingle as a clamp. (See detail sketch.) For corners and hips, finials and hips starters can be obtained.

Laying of Shingles—Shingles shall be laid with $1\frac{1}{2}$ in. (Standard) to 4 in. gap between them. Nail with copper nails (not lighter than $\frac{1}{4}$ in. No. 14 on new work, and 2 in., No. 12 when re-roofing over old shingles). Nailing shall be done about 1 in. from either side of shingle and about 10 in. from lower end. Toe roll of shingle shall always be at the bottom. Shingles shall be laid with about 6 in. to the weather and with at least 3 in. side lap and 4 in. head lap. At side edges of roof, one end of toe roll of shingle shall be clipped off far enough so that side of shingle can be bent down to cover the ends of the roof sheathing boards.



*Note: This important difference between other types of shingles and Kenmar Copper Shingles must be carefully observed. Copper must *not* come in contact with other metals; hence, with a roof of Kenmar Shingles *all* flashings, gutters, downspouts, nails, cleats, etc., shall also be of copper. If any question arises as to application of copper to flashings, etc., consult Sheet Copper Handbook of the Copper and Brass Research Association, 25 Broadway, New York. Free copies can be obtained from the Association or from this company.

MEMORANDA

ROOFING

- SECTION -

8

CATALOGS 37 to 54

**SHEET METAL
AND
ACCESSORIES**

JOHNS-MANVILLE

EXECUTIVE OFFICES

22 East 40th Street, NEW YORK, N. Y.

Products



JOHNS-MANVILLE TRANSITE PRODUCTS.

For the following Johns-Manville products, see File Index: Transite Walls; Acoustical Treatment and Sound Isolation; Asbestos and

Asphalt Shingles; Built-up Roofs; Insulated Roofs; Home Insulation; Insulating Board; Pipe Coverings and Insulations; Tile Flooring; Asbestos Wainscoting and Flexboard.

JOHNS-MANVILLE TRANSITE PRODUCTS

Corrugated Transite Roofing and Siding

Corrugated Transite Asbestos Roofing and Siding is made of asbestos fibres and portland cement united under hydraulic pressure into dense, unlaminated, monolithic sheets of great strength and rigidity. It is designed for application directly over purlins or girts of skeleton steel or wood frame construction. It will not burn or rust, rot, split, crack or curl. In color, it is an attractive light gray. It is weatherproof, highly resistant to corrosion and requires no painting or other maintenance.



Laying J-M Corrugated Transite Roofing

The cut corner construction permits a tight joint with straight lap lines

Transite can be readily drilled or sawed and is secured with bolts, screws, clips, etc., designed for that purpose. Special shapes of the same material for use as ridge roll, corner roll, louvres, etc., are available.

Sizes—Sheets are furnished 42 in. wide in lengths up to 11 ft. They are $\frac{7}{16}$ in. thick at ridges and valleys of corrugations and $\frac{1}{8}$ in. thick at the slope. The corrugations are 4.2 in. pitch. The over-all thickness of the sheets is $1\frac{1}{2}$ in. Approximate weight, 4.1 lbs. per sq. ft. uncrated.

Application—See next page. Transite may be applied over roof purlins spaced on not greater than 54-in. centers (minimum roof pitch 2 in. per foot), and on siding girts not over 66 in. center to center. Sheets are laid with a 6-in. end lap and a one-corrugation side lap, providing an exposure of 37.8 in.

Flat Transite Sheets

Flat Transite has the same characteristics as Corrugated Transite. It is generally regarded as the outstanding fireproof, corrosion-resistant building sheet on the market today. Its attractive, light gray color and interesting texture also offer definite decorative possibilities. Furnished 36x48 in., 42x48 in., 48x48 in., and 42x96 in., from $\frac{1}{8}$ to 2 in. thick.

W. R. Transite

Both Flat and Corrugated Transite sheets can be furnished with a bituminous impregnation to afford maximum impermeability where the material will be subjected to extreme or sustained moisture or acid conditions.

W. R. Flat Transite is furnished in standard size sheets, 42x96 in., $\frac{1}{4}$ in. thick; 42x48 in., $\frac{1}{8}$, $\frac{3}{16}$ and $\frac{1}{4}$ in. thick; and 36x48 in., $\frac{1}{8}$ and $\frac{3}{16}$ in. thick. Smaller sizes can be furnished on special order.

W. R. Corrugated Transite is furnished in the same sizes as standard Corrugated Transite, but in lengths only up to and including 8 $\frac{1}{2}$ ft.

Transite Flues and Stacks

Transite Pipe, one of the newest J-M asbestos-cement products, is already being widely used for venting gas burning appliances because of its unusual resistance to corrosive gases and fumes. The material is supplied in either round or oval form and in a full range of diameters. For complete data on Transite Flue Pipe and accessories, ask for Data Sheet Series No. 331.

This same material is also finding extensive application as industrial stacks, particularly where corrosive fumes may be encountered.

Transite Ventilators

Transite Ventilators, made from Transite Pipe, are designed for use on all buildings where fireproof, fume-proof and weather-proof construction is desired. They are especially satisfactory for engine houses, gas and power houses, laboratories, factories, etc., where a corrosion-resisting ventilator is essential. They never need painting and have proved most economical because of their permanence and freedom from maintenance.

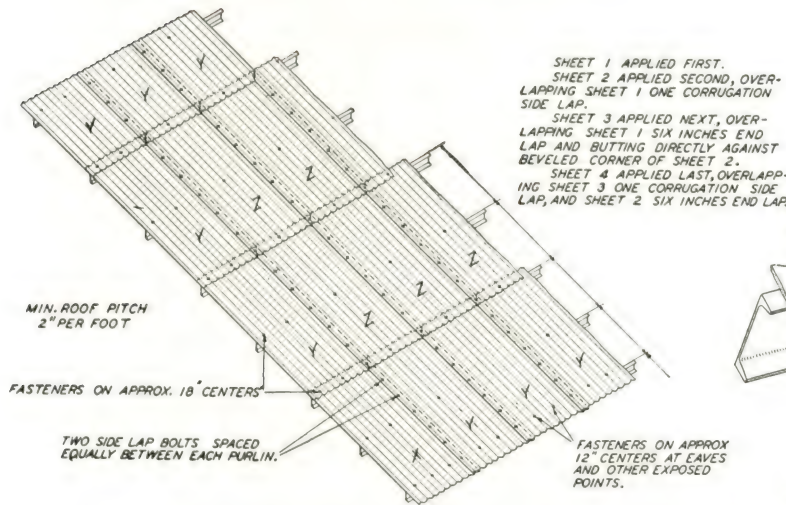
Transite Pipe has a surface smoother than new and clean metal, and the design of the ventilators provides surface contours which permit the unimpeded flow of exhaust air.

Transite Ventilators have no exposed metal parts on either the interior or exterior surfaces. This is accomplished by the use of Transite throughout and the protection of bolt heads and nuts by a cement similar to Transite itself.

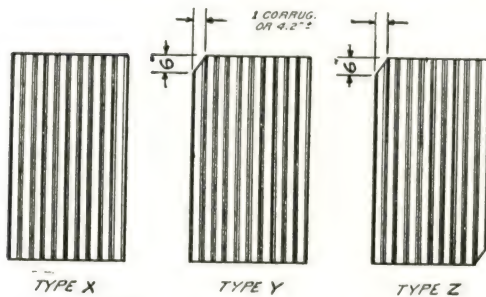
Sizes 10 to 24 in. are shipped assembled. Larger sizes are shipped knocked down.



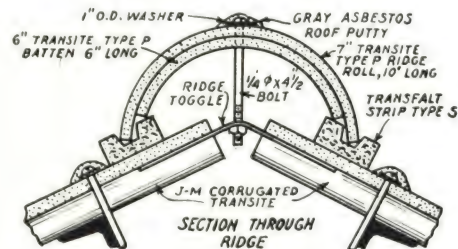
CORRUGATED TRANSITE CONSTRUCTION DETAILS



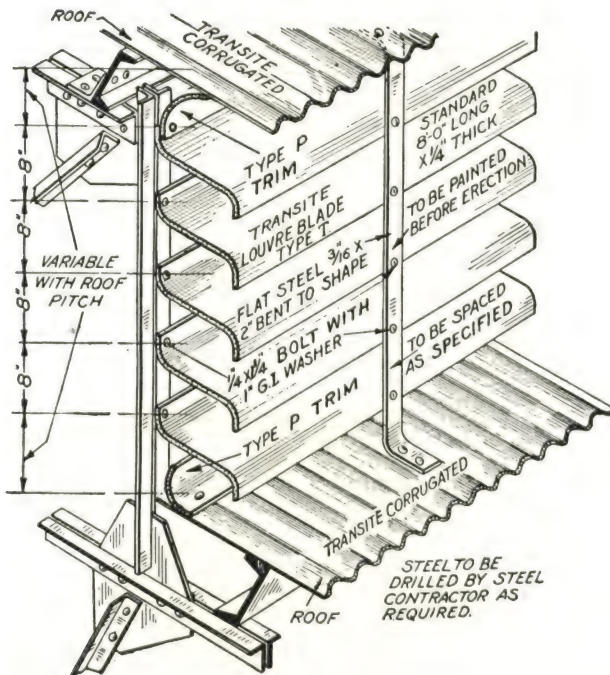
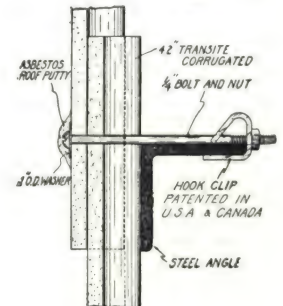
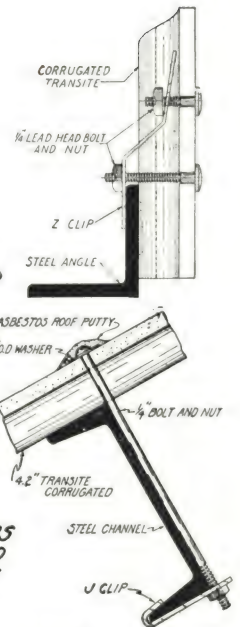
STRAIGHT LAP LINE CONSTRUCTION WITH CUT-CORNER SHEETS



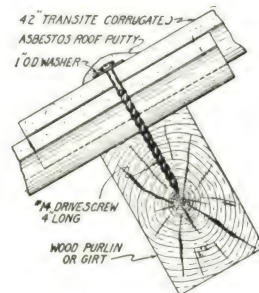
TYPES OF CUT-CORNER SHEETS



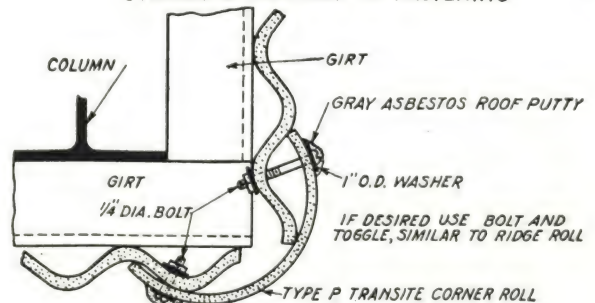
APPLICATIONS OF THE CLIPS
SHOWN CAN BE ALTERED TO
ACCOMMODATE ANY TYPE OF
CONSTRUCTION.



TRANSITE LOUVRE CONSTRUCTION
IS IDEALLY ADAPTED FOR MONITORS
AND OTHER LOCATIONS WHERE ABUNDANT
VENTILATION MUST BE COMBINED WITH
MODERATE WEATHER PROTECTION

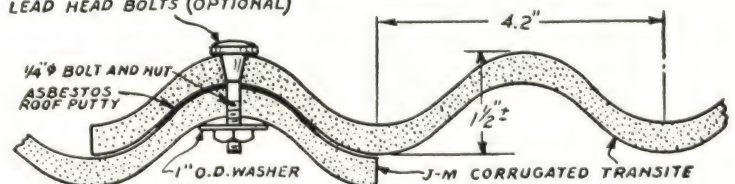


STANDARD METHODS OF FASTENING



SECTION SHOWING CORNER ROLL

LEAD HEAD BOLTS (OPTIONAL)



SIDE LAP CONSTRUCTION

H. H. ROBERTSON COMPANY

Robertson World-Wide Building Service

PITTSBURGH, PA.

FACTORIES: AMBRIDGE, PA.; SARNIA, ONT., CANADA; ELLESMERE PORT, CHESHIRE, ENG.

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LITTLE ROCK, ARK., Wherry & Company, 115 Center St.
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For England: H. H. ROBERTSON COMPANY, MERSEY IRON WORKS, Ellesmere Port, Cheshire

For CANADA: H. H. ROBERTSON CO., LTD.—TORONTO (MAIN OFFICE), 611 Metropolitan Bldg.; MONTREAL OFFICE, 524 Confederation Bldg.

Products

ROBERTSON PROTECTED METAL (RPM) ROOFING, SIDING, FLASHINGS, GENERAL BUILDING TRIM, DUCTS, etc.; also available in Ventilators, Louvers, Hoods and Ducts.

ROBERTSON PROTECTED METAL V-BEAM ROOFS for decks under insulated or built-up roofs; for extra-load-carrying roofs without insulation; or for siding.

TILE FACED ROBERTSON PROTECTED METAL—RPM in light, attractive colors and "textured" ceramic type finishes.

COPPER COVERED ROBERTSON PROTECTED METAL—RPM with an attractive outer covering of Anaconda "Electro-Sheet" Copper. Also furnished with aluminum foil surface.



For Robertson Ventilators, Skylights, Sidewall Sash, Floor Wiring Systems, and Robertson Cellular Steel, see File Index.

Patents

Robertson Protected Metal, Robertson V-Beam Sheets, Tile Faced RPM and Copper Covered RPM are protected by United States Patents dated as follows: Jan. 13, 1920; Feb. 1, 1921; Dec. 6, 1921; March 28, 1922; June 6, 1922; June 27, 1922; October 17, 1922; August 21, 1923; May 5, 1925; July 20, 1926; June 30, 1931; June 14, 1932; June 28, 1932. Other patents allowed and pending in United States, Canada, England, France, Belgium, Australia, Japan, and New Zealand.

ROBERTSON PROTECTED METAL (RPM)

Robertson Protected Metal is a steel roofing and siding protected against rust, weather and corrosion by a series of external, factory-applied coatings. These coatings are shown on the cutaway drawing below. Copper Covered RPM (described on next page) is the same except for the outer coating, which is of beautiful Anaconda "Electro-Sheet" copper.

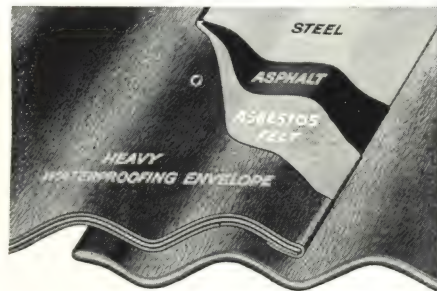
Types of Destructive Agencies It Withstands—RPM has successfully withstood the destructive agencies listed below, on all types of buildings and in all climates. Ask for installation lists.

Sulphuric acid
Hydrochloric acid
Hypochlorous acid
Hypochlorous fumes
Phosphoric acid

Caustic soda
Nitric acid
Benzoic acid
Acetic acid
Ammonia fumes

Various alkalis
Moisture
Smoke
Condensation
Salt Air, etc.

Complete figures showing results of comparative tests on RPM and other materials under actual conditions and the savings in costs over a period of years may be obtained on request.



Robertson Protected Metal

Cutaway view showing protective layers which cover the steel and prevent corrosion: (1) asphalt; (2) asphalt-impregnated asbestos felt; (3) heavy waterproofing envelope

Reduction of Heat Loss—RPM provides greater insulation than unprotected metal sheets, because of the natural insulation of the protective coatings on each side, and also because the slightly "tacky" nature of the external envelope of RPM causes the overlapping sheets to seal

themselves together into one continuous sheet and thus prevents infiltration of cold air.

General Advantages—RPM permanently eliminates the need for painting and other maintenance. It is easily erected. It is

DIMENSIONS, GAUGES, WEIGHTS, COVERAGE OF ROBERTSON PROTECTED METAL

Lengths, 5 to 12 ft., inclusive. Also in odd lengths as specified

	Number of corr. or beads	Width and depth of corr., in.	Gross width of sheet, in.	Net covering width, in.	Side lap	Ga.	Weight per 100 sq. ft. material area, lbs.			
							Black		Maroon	
							Net	Crated	Net	Crated
Corrugated roofing....	12½	2½x3½	33	29¾	1½ corr.	24	175	190	185	200
Corrugated siding....	13	2½x3½	33	31	1 corr.	22	200	215	210	225
Mansard....	6*	2½x1	33	30	1 bead	18	230	245	240	255
							285	300	295	310
V-beam.....	5**	1¾ Deep	29	26¾	½ v.	24	200	225	215	240
						22	230	255	245	270
						20	265	290	280	305
						18	330	360	345	375

*6 in. c. to c.

**5.3 in. c. to c.

RPM is furnished in two standard colors: black and maroon. It can also be supplied with aluminum finish (bright or dull) on one or both sides.

RECOMMENDED PURLIN AND GIRT SPACINGS FOR RPM

Ga.	Corrugated Roofing		Siding, ft. in.	V-Beam, ft. in.
	Slopes over 4 in. in 12 in. ft. in.	Slopes under 4 in. in 12 in.* ft. in.		
24	4 9	.....	4 10	7 0
22	5 9	4 9	5 10	8 0
20	6 6	5 9	6 8	8 9
18	7 6	6 6	7 8	10 0

*Where roof slope is less than 4 in. in 12 in. all side and end laps should be laid in Robertson Cement. Corrugated sheets should not be laid where slope is less than 2 in. in 12 in. Mansard sheets should not be laid on slopes of less than 4 in. in 12 in.

light in weight and the supporting structural steel framework can be correspondingly lighter. It is adaptable to wide purlin spacings without danger of sagging.

Vibration will not cause it to break or loosen where it is bolted to the framework nor cause it to leak where the sheets are joined. It can be bent or lapped to fit around corners or gables, to fit curved walls or roofs, to fit warped or uneven surfaces.

20% Wider Than Commercial Corrugated Sheets—This reduces the number of side laps, thus reducing the percentage of loss in covering capacity.

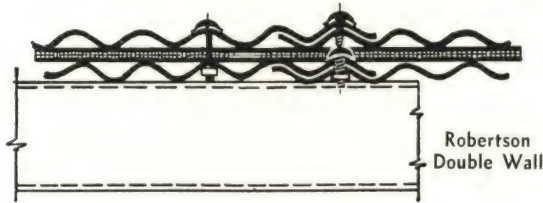
Flashings and Fasteners—Standard flashings and building trim are furnished in RPM in the same colors as the

roofing and siding sheets and in corresponding gauges. Maximum length, 10 ft.

The standard method of fastening RPM is with protected metal straps around the purlins or girts, bolted to the RPM sheets. These patented straps are completely encased in corrosion-proof coverings. Bolts are sherardized $\frac{1}{4}$ in. with mushroom shaped heads. For fastening siding sheets where legs of girts face up, there is a sherardized clip and bolt fastening. For applying RPM on wood, special nails with mushroom heads are used. Rivet clips are standard for V-beam sheets and also available for corrugated or mansard roofing.

Pre-fabricated—All special pieces are cut to fit the plans at our factory and are numbered for ease in erection.

ROBERTSON PROTECTED METAL DOUBLE WALL CONSTRUCTION



Robertson Protected Metal Double Wall Construction consists of two sheets of Robertson Protected Metal with insulating material between. This form of construction is becoming very popular in the construction of roofs and sidewalls.

Advantages—This RPM Double Wall Construction is distinguished by the following advantages: *Lightness of weight*

—which effects savings in foundation construction. *Adaptability*—its method of construction is easily adapted to conventional mill construction practice. *Correct thermal insulation*—an impervious construction which gives approximately the same insulating value in wet weather as in dry. RPM Double Wall Construction approximates the insulating value of a 12-in. brick wall. *Economy*—first cost compares favorably with best masonry construction, and maintenance cost is low. *Rapid erection*—work may be carried on in weather unfit for masonry construction and with far greater speed, thus providing for more rapid occupancy. *Salvability*—because of the combination of endurance, corrosion-resistance, light weight, prefabrication, and patented application methods. *Proven performance*—many successful installations have been made and have proved their excellence in actual service.

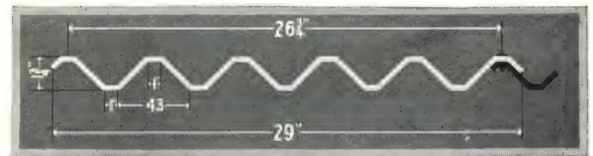
ROBERTSON PROTECTED METAL V-BEAM ROOFS

V-Beam Robertson Protected Metal is a special "deep-corrugation" sheet which represents a great advance in the form and application of corrugated materials. In addition to the corrosion-resistant and maintenance-free characteristics of the standard Robertson Protected Metal, the V-Beam sheet provides a higher degree of strength and resistance to deflection than the ordinary types of corrugation. In effect, the RPM V-Beam sheet provides the structural effect of a series of beams, and because of its extra strength, makes possible important economies in supporting steel work. The deep V-Beam corrugations possess such high drainage efficiency that exceptionally low roof pitches become practical. In addition to its advantages as a self-contained roofing material, the RPM V-Beam sheet also offers great advantages as a corrosion-resistant, maintenance-free deck for flat and built-up insulated roofs.

Dimensions, gauges, weights, coverage, purlin spacings, etc.—See tables on preceding page.

Dead loads—V-Beam, uninsulated, 3 to 5 lbs. per sq. ft.; insulated, 7 to 10 lbs. per sq. ft., depending on gauge used.

Applying Insulation and Built-up Roofing—The usual procedure is followed. Rigid board insulations are recommended. If one layer is used, it is bolted directly to the V-beam sheets. If additional sheets are used, the multiple layers are stapled together or are monolithic and are mopped with asphalt and bolted to the deck as a unit. The upper layer of insulation is mopped with asphalt to receive the first layer of built-up roofing. Successive layers are applied in the usual manner.



LOAD TABLES FOR V-BEAM SHEETS

Based on simple beam conditions, for a clear span, and a uniformly distributed load. Loads shown are those at which the steel core sheet has a maximum fibre stress in bending of 16,000 lbs. per sq. in. on the nominal thickness of material. The deflections shown correspond to the loads given for the various gauges and for the particular span.

For a 35-lb. total load (approximately 30-lb. live load) the gauges and spans indicated by bold type will provide the greatest over-all economy.

Gauge U. S. Standard	24	22	20	18	Deflection in Inches
Nominal Thickness of Core Sheet	.025	.03125	.0375	.050	
Clear span length	Safe loads—pounds per square foot, uniformly distributed—live load plus dead load.				
4'-0"	115	140	170	260	.15
4'-6"	93	112	135	180	.20
5'-0"	75	93	110	145	.24
5'-6"	62	77	90	120	.29
6'-0"	52	65	77	102	.35
6'-6"	45	55	65	88	.41
7'-0"	38	48	57	77	.48
7'-6"	33	42	50	66	.55
8'-0"	29	36	43	58	.62
8'-6"	25	32	38	52	.70
9'-0"	23	28	35	46	.80
9'-6"	21	25	30	40	.87
10'-0"		23	28	37	.96
10'-6"		22	25	34	1.05
11'-0"			23	30	1.15

COPPER COVERED ROBERTSON PROTECTED METAL (RPM)

Copper Covered RPM is an especially attractive addition to the Robertson Protected Metal line.

It is long-lived RPM with surface of durable and beautiful Anaconda "Electro-Sheet" copper. This new form of RPM is offered the builder who requires a roofing and siding material possessing distinctive eye-appeal as well as long life. Its cost is only slightly more than that of standard RPM; yet it combines the beauty of copper, the long life of RPM and the strength of steel.

Copper Covered RPM is ideally adapted for erection on indus-

trial buildings, public and commercial buildings, bridges between all types of buildings, canopies for railroad stations, airplane hangars, substations and many other types of modern structures.

The outer surface of Anaconda "Electro-Sheet" copper covers dependable RPM, a product that is backed by thirty years of outstanding accomplishment in all phases of industry, throughout the world.

Write for the folder that shows the appearance of Copper Covered RPM when erected. Aluminum Covered RPM is also available.

THE AMERICAN BRASS COMPANY

Manufacturers of Sheet, Roll and Strip Copper

GENERAL OFFICES
WATERBURY, CONNECTICUT

MANUFACTURING PLANTS

ANSONIA, CONN. WATERBURY, CONN. TORRINGTON, CONN. BUFFALO, N. Y.

DETROIT, MICH. KENOSHA, WIS.

OFFICES AND AGENCIES

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BOSTON, MASS., 140 Federal Street
CHICAGO, ILL., 1326 W. Washington Boulevard
CINCINNATI, OHIO, 101 W. Fourth Street
CLEVELAND, OHIO, 2906 Chester Avenue
DAYTON, OHIO, 32 No. Main Street
DENVER, COLO., 818 Seventeenth Street
HOUSTON, TEX., 609 Fannin Street

LOS ANGELES, CAL., 411 W. Fifth Street
NEWARK, N. J., 20 Branford Place
NEW YORK, N. Y., 25 Broadway
PHILADELPHIA, PA., 117-21 So. Seventeenth Street
PITTSBURGH, PA., 535 Smithfield Street
PROVIDENCE, R. I., 131 Dorrance Street
ROCHESTER, N. Y., 934 Arnett Boulevard

ST. LOUIS, MO., 408 Pine Street
SAN FRANCISCO, CAL., 235 Montgomery Street
SYRACUSE, N. Y., 408 State Tower Building
WASHINGTON, D. C., 1511 K Street, N. W.
THE AMERICAN BRASS CO. OF ILLINOIS,
1326 W. Washington Boulevard
SEATTLE, WASH., 1338 Fourth Avenue

CANADIAN MILL: Anaconda American Brass Limited, NEW TORONTO, ONT.

Products

ANACONDA SHEET COPPER, ROLL COPPER, ECONOMY COTTAGE ROOFING and THROUGH WALL FLASHING.

For pages on Anaconda Architectural Extruded Shapes and Drawn Shapes; Brass and Copper Pipe and Copper Water Tubes; Everdur Metal; and "Electro-Sheet" Copper for Built-up Asphalt Roofs, see File Index.

Sheet Copper

Because of the durability of copper, this metal is extensively used for all types of exposed sheet metal work. Copper is practically immune to deterioration by atmospheric corrosion, with the result that painting and other forms of maintenance are unnecessary. Copper, on exposure, protects itself by the formation of a tightly adherent patina which is insoluble in water.

The accurate reproduction of architectural designs is possible in copper because of the metal's ready workability. ANACONDA Sheet Copper is uniform in quality, weight and temper and is guaranteed 99.9% pure.

Copper Spandrels

The growing use of metal spandrels widens the field of application for copper in building construction. ANACONDA Sheet Copper, either lead-coated or plain, may be stamped and formed in a wide variety of designs suitable for most types of buildings. Sheet Copper Spandrels can be backed by an insulating material, becoming an integral part of a building's construction, or used uninsulated on the face of rough masonry in the manner of applied ornamentation.

Cold-rolled and annealed 20-oz. copper sheets assure sufficient rigidity in spandrels. In some cases 16-oz. copper is satisfactory.

Lead-coated Anaconda Copper

ANACONDA Sheet Copper is furnished lead-coated in standard weights and sizes. The same textures can be obtained in lead-coated copper as in solid lead, at a saving in weight and cost.

Roofing Copper

Sheet Copper is widely used for the standing and batten-seam type of metal roof. 16-oz. sheets, 24x96, 30x96 and 36x96 ins. are regularly furnished for roofing.

In tile form, Sheet Copper weighs even less than wood shingles and does not require heavy roof framing. A number of manufacturers supply copper tile in plain and ornamental designs, with interlocking features that assure watertight joints, ready application and proper allowance for expansion and contraction.



Anaconda Economy Cottage Roofing

Recent changes in specifications, improved mechanical efficiency in the production of sheet copper and an abundant supply of the metal, now make it possible to install a standing seam copper roof on a small home at a cost which compares favorably with that of a commercial quality slate roof.

By using sheets 16-in. wide, thus reducing the seam spacing to a scale proportionate to the lines of the building, thinner metal can be used without sacrificing the strength and wind resistance obtained with wider panels of heavier gauge sheets. The design of the seams provides for sufficient metal to assure strength and rigidity. For this purpose, THE AMERICAN BRASS COMPANY offers a new product known as ANACONDA Economy Cottage Roofing which is supplied in the form of 16-in. strips of 10-oz. copper, 6 ft. long. The strips can easily and quickly be formed at the shop or on the job. After being formed, the pans are installed on the roof with regular tools.

Anaconda Through-Wall Flashings

Anaconda Through-Wall Flashings (Patent No. 1,906,674) are efficient, positive and comparatively inexpensive, yet readily adapted to practically every brick or masonry condition. Made of 16-oz. ANACONDA Copper, either plain or lead coated, ANACONDA Flashings are furnished in strips 5 ft. long, with ridges embossed in two widths. These ridges, which prevent lateral movement, are so designed that water will flow to the outside face of the wall.

The flexibility of the patented design facilitates installation by permitting quick, accurate roof and counterflashing bends, without unsightly ridges which interfere with the free discharge of water. Because they can be bent and cut to fit on the job, ANACONDA Through-Wall Flashings can be installed easily and quickly, with a minimum of delay to bricklayers and masons. Tight end joints can be made by overlapping one ridge. Angles at corners may be flashed by butting or slightly overlapping the adjoining sheets—no special shapes or fittings being required. When specified, solder is easily applied to the flat ends of the strips.

Stock Gutters and Leaders

Arrangements have been made with a number of leading sheet metal manufacturers, whereby gutters and leaders made of ANACONDA Copper, with the trade-mark embossed in the metal, are available in all sections of the country.

THE AMERICAN ROLLING MILL COMPANY

Makers of Ingot Iron Sheets and Plates, Special Analysis,
Special Finish Steel Sheets, and Spiral Welded Pipe

EXECUTIVE OFFICES

307 Curtis Street, MIDDLETOWN, OHIO

DISTRICT SALES OFFICES

ATLANTA, GA., 1437 The Citizens & Southern
National Bank Building
BOSTON, MASS., 201 Devonshire Street
BUFFALO, N. Y., 509 Seventeen Court Street
Building
CHICAGO, ILL., 1122 Straus Building

CLEVELAND, OHIO, 1516 B. F. Keith Building
DALLAS, TEX., 1110 Santa Fe Building
DETROIT, MICH., 5-261 General Motors Build-
ing
KANSAS CITY, MO., Sheffield Station
MIDDLETOWN, OHIO, 703 Curtis Street

NEW ORLEANS, LA., P. O. Box 480
NEW YORK, N. Y., 50 Church Street
PHILADELPHIA, PA., 2020 Lewis Tower
PITTSBURGH, PA., 1632 Oliver Building
ST. LOUIS, MO., 1724 Ambassador Building
SAN FRANCISCO, CAL., 540 Tenth Street

Distributors in Principal Cities Can Supply Contractors' Requirements Promptly

Armco Products

INGOT IRON, STEEL and COPPER BEARING STEEL:
Galvanized (flat and corrugated), Hot Rolled, Hot
Rolled Annealed and Cold Rolled grades.

PLATES: Ingot Iron and Steel.

ROOFING and SIDING (Galvanized or Black Ingot
Iron and Steel): Double Cross Lock Roll; 2, 3,
and 5-V Crimp; Standing Seam; Pressed Standing
Seam; and 1¼, 2½ and 3-in. Corrugated Roofing.
Plain Pressed Brick; Rock Faced Brick; Rock
Faced Stone; Weatherboard; and 1¼, 2½ and
3-in. Corrugated Siding. Plain and Corrugated Ridge Roll
and Flashing.

SPIRAL WELDED PIPE: A strong, easily handled, smooth-bore
pipe, made in diameters, 6 to 36 in., lengths up to 40 ft., and
wall thicknesses, ⅜-in. to ½-in.

Manufactured Building Products Made of Armco Sheets:
Gutters, Downspouts, and other Roof and Roof Drainage Fit-
tings are carried in stock by Armco Distributors throughout
the country. Porcelain Enameled Roof Shingles and Wall
Tile are made and sold by the Wolverine Porcelain Enameling
Co., Detroit, Mich. Metal Lath and Fittings are made and
sold by The Milcor Steel Co., of Milwaukee, Wis., and the
United States Gypsum Co., Chicago, Ill. For the schoolroom,
Metal Blackboards of Ingot Iron ("Metalboard"), porcelain
enameled in attractive colors, are made and distributed by the
American Seating Co., Chicago, Ill.

Standard Gages and Sizes

Ingot Iron galvanized sheets are carried in stock in the
following sizes:

Gages—16, 18, 20, 22, 24, 26 and 28. Widths—24, 26, 28, 30,
and 36 ins.

Lengths—96 and 120 ins.

Ingot Iron corrugated, galvanized and black sheets for roof-
ing and siding purposes are made with 5, 3, 2½ and 1¼-in.
corrugations. For general building purposes we recommend
and carry in stock a 2½-in. corrugated sheet 26 ins. wide
(after corrugating) for siding, and 27½ ins. wide (after
corrugating) for roofing. This size covers 24 ins. in the width
and allows for a one-corrugation lap for siding and a one-
and-one-half corrugation lap for roofing. These sheets may
be obtained from stock in the following sizes: Gages—20, 22,
24, 26, 28. Lengths—60, 72, 84, 96, 108, 120, 144 ins.

All of the above sizes are termed standard sizes because
they are carried in stock and used most frequently. All grades
of sheets may be obtained in special sizes when an order is
placed for 2000 lbs. or more of a size.

Ingot Iron Durability

Ingot Iron was the first refined iron to be made by the open
hearth process, and was developed especially to give long
durable service. Galvanized Ingot Iron sheets have the addi-
tional protection of a heavy coating of high grade zinc, insur-
ing the utmost durability possible to provide in galvanized
sheet metal.

Ingot Iron Makes Sound Welds

Another advantage of the uniform refinement of Ingot Iron
is its excellent welding properties. It melts evenly under weld-
ing temperature and makes a sound, dense weld that is as
strong and rust-resistant as the surrounding area.



Ductile and Workable

Again, the uniformity of Ingot Iron makes it
remarkably soft and workable, virtually free from
irregular hard spots that interfere with accurate
forming to intricate designs. Also, the special
attention given to Ingot Iron throughout its man-
ufacture insures freedom from the strains and
stresses that frequently cause sheets to crack or
split when formed sharply.

Saves Money for Owners

On a cost-per-year basis, Ingot Iron has proved its ability
to save money for its owners. This evidence is found in the
record of nearly thirty years of satisfactory service.

Data on the service of Ingot Iron taken from actual instal-
lation records are available to help determine the probable life
and yearly cost in specific new projects. Almost always this
information can be selected from the particular industry or con-
ditions of service in which you are interested, and frequently
comparative records are also available to show how other grades
of sheet metal have served under identical conditions.

How to Identify Ingot Iron

The Armco Triangle with the words, "Ingot Iron," stenciled
in blue on every sheet, is definite protection against substitu-
tion of inferior grades or lighter gages. In each instance the
gage is shown at the right of the triangle. All Ingot Iron
construction should reveal at least a portion of the blue triangle
as it is placed three times diagonally lengthwise on the sheet.
If Ingot Iron has been specified and no part of the triangle
is in evidence, either inside or outside, it is certain that the
specifications have not been followed.

Ingot Iron and Steel Plates

Especially suited to the fabrication of tanks, stacks, breech-
ing, and other mechanical plate equipment. The booklet, "Pure
Iron Plates for Long Service," and the bulletin, "Iron Plate
Specifications" (A.S.T.M.) and "Use of Plate Metal in Me-
chanical Equipment," contain useful information that every
architect and engineer should have. Your request will bring
copies promptly.

Where to Get Armco Sheets and Formed Products

Leading distributors and sheet metal contractors in all parts
of the United States supply galvanized sheets and formed prod-
ucts, and in some instances, hot-rolled and hot-rolled annealed
sheets and plates. Names and addresses of distributors and sheet
metal contractors in any territory will be supplied on request.

Ingot Iron for Porcelain Enameling

Throughout the enameling industry, Ingot Iron is recognized
as the "Standard Enameling Iron." For enameled store fronts
and other building applications you will be giving your clients
the best possible base for enameled finishes when you specify
Armco Enameling Iron outright. Write for further data.

Every Architect Should Have This Literature

The following publications are available on request: "Cool-
ing and Ventilating the New Minneapolis Civic Auditorium";
"Ventilation of a 13-story Office Building"; "What Architects
Are Doing with Porcelain Enamel," a comprehensive treatise
with photographs and detailed drawings on application of Por-
celain Enameled iron to store fronts, theatres, gas stations and
similar structures.

AMERICAN SHEET AND TIN PLATE COMPANY

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

GENERAL OFFICES

Frick Building, PITTSBURGH, PA.

Manufacturers of Sheet and Tin Mill Products for All Uses in Building Construction Fields

DISTRICT SALES OFFICES

CHICAGO, ILL., 208 So. La Salle Street Building
DETROIT, MICH., General Motors Building
DENVER, COLO., First National Bank Building
HOUSTON, TEX., Petroleum Building

BIRMINGHAM, ALA., Brown-Marx Building

PACIFIC COAST DISTRIBUTORS—COLUMBIA STEEL COMPANY, San Francisco, Calif.
EXPORT DISTRIBUTORS—UNITED STATES STEEL PRODUCTS CO., New York, N. Y.

NEW YORK, N. Y., 71 Broadway
CINCINNATI, OHIO, Union Trust Building
ST. LOUIS, MO., Mississippi Valley Trust Building
PHILADELPHIA, PA., Widener Building

Products

AMERICAN BLACK SHEETS, GALVANIZED SHEETS, RUST RESISTING COPPER STEEL SHEETS, CORRUGATED SHEETS and all standard patterns of Formed Roofing and Siding Products; GALVANNEALED SHEETS, ENAMELING SHEETS, COLD ROLLED SHEETS, SHEETS for Special Purposes; BRIGHT TIN PLATES, TERNE PLATES or ROOFING TIN.

Also USS High Tensile Steel Sheets, and USS Stainless and Heat Resisting Steel Sheets and Light Plates.

Description and Uses Steel Sheets

This Company has specialized in the production of high-grade Steel Sheets and Tin Plates for many years, and their brands are recognized standards in the trades, crafts, and fields utilizing sheet metals.

AMERICAN *Apollo Best* Galvanized Sheets have been produced continuously for over fifty years, and are favorite with sheet metal workers in all parts of the country, by reason of their good working quality and excellent coating. These sheets are particularly adapted for all forms of galvanized sheet metal work.

AMERICAN *Apollo-Keystone* Copper Steel Galvanized possesses all the excellent qualities of the Apollo brand, with the addition of a copper-steel alloy base, which gives maximum rust resistance for all exposed sheet metal work such as gutters, spouting, eaves trough, conductor pipe, cornices, skylights, and similar applications. Keystone quality is also specially adapted for industrial construction—as supplied in Corrugated and other standard patterns of Formed Roofing and Siding products.

AMERICAN Black Sheets in connection with above named Galvanized Sheets, are used extensively for heating and ventilating systems. Many important



installations in leading buildings of this country are constructed of these high grade materials. Keystone Copper Steel Black Sheets also have wide utility. Unexcelled for metal lath, and other important construction uses where rust resistance is an important factor.

Terne Plates, or Roofing Tin

This Company produces highest quality AMERICAN Terne Plates with Keystone Copper Steel base, 8 to 40 pounds coating. The heavier coatings are particularly adapted for high grade tin roofs, when laid flat seam, standing seam, or batten seam. These plates excel for flashings and similar uses. Also Long Terne Sheets, Keystone quality, 40 pounds coating, for particular uses to which Long Ternes are applicable.

Sheets for Special Purposes

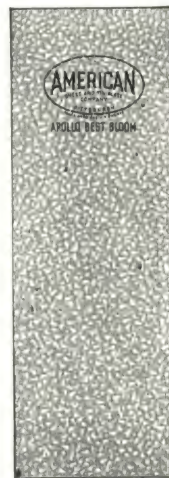
Special Sheets are produced adaptable to wide range of uses and applications. Full information will be given upon request.

USS Stainless Steel Sheets

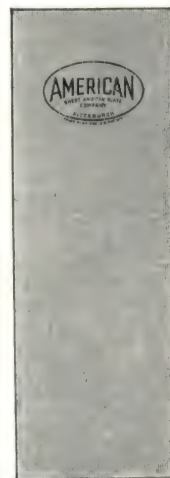
Stainless Steel Sheets are extensively used in architectural and construction fields, by reason of their adaptability and decorative possibilities. This Company manufactures high grade USS Stainless Steel Sheets and Light Plates in several finishes as adapted to this work. USS 18-8 grade is particularly suited to the architectural field.

General Information

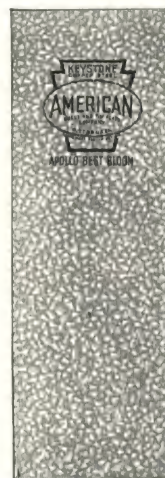
AMERICAN Sheet and Tin Mill Products are sold by leading metal merchants, or they can readily obtain them for you. Full information and literature will be supplied upon application to any of the District Sales Offices listed above.



Apollo Best Bloom
Galvanized



American Black
Sheets



Apollo-Keystone
Galvanized

AMERICAN ZINC INSTITUTE, INC.

"Seal of Quality" Heavy Coated Galvanized Sheets for Roofing and Siding

60 East 42nd Street
NEW YORK, N. Y.

Product

SEAL OF QUALITY HEAVY-COATED GALVANIZED SHEETS are a specially manufactured product designed to meet the fast-growing and insistent demands for a more durable roofing and siding material.

The zinc coating on SEAL OF QUALITY sheets is extra heavy, fully two ounces per square foot. Because of this thick rust-preventive protection, SEAL OF QUALITY sheets can be depended upon to give long extra years of rust-free service at a minimum "per year" cost.

Need of Heavy Zinc Coating

Increased durability of galvanized sheets makes possible substantial savings in upkeep and replacement costs.

Various base-metals are used in such sheets, including Bessemer and open-hearth steel, copper-bearing steel, pure iron, wrought iron, copper-bearing iron, etc. All of these will *begin to rust as soon as exposed to the atmosphere*—the rate of corrosion, or rusting, varying for the different types, as shown in numerous tests which have been made upon the uncoated or "black" sheets.

To *prevent rust*, these sheets are coated with zinc, which, as stated in U. S. Bureau of Standards Circular No. 80, is "by far the best" protective metallic coating for the rust-proofing of iron and steel. Zinc, being electro-negative to iron and steel, exerts "galvanic" protection against corrosion of the base metal, even where the latter is exposed over a small area, as for instance by a scratch in the coating. Most other non-ferrous metals used in coating iron and steel tend to accelerate or increase rusting under such conditions instead of inhibiting it.

When zinc-coated or "galvanized" sheets are exposed to the elements, *the time elapsing before the appearance of unsightly*



and destructive red rust depends not upon the nature of the base-metal, but upon the weight or thickness of the zinc coating. The heavier the coating the longer the service life; in fact, except in severe industrial atmospheres, heavier coatings have been shown to give much more than a proportionate increase in life.

SEAL OF QUALITY HEAVY-COATED SHEETS are specially made by licensed manufacturers and carry an extra-heavy zinc coating—two ounces per square foot. Their high standard is

maintained by rigid tests and inspections, which are checked by the engineers of the American Zinc Institute. Both the "SEAL OF QUALITY" brand and the trademark or name of the manufacturer appear on *every* sheet, thus giving double assurance of quality.

The small additional cost of SEAL OF QUALITY HEAVY-COATED SHEETS is much more than offset by their increased life.

Sizes and Styles

Available in No. 28 gauge and heavier, in all standard widths and lengths.

Sold mainly as formed roofing and siding, particularly in the 2½-in. and 1¼-in. corrugated styles. Corrugated sheets are the strongest form of sheet metal known, and are not appreciably affected by expansion and contraction. Also sold in V-crimped styles by certain manufacturers.

SEAL OF QUALITY HEAVY-COATED SHEETS are not suitable for more severe forming operations unless special measures are taken to prevent damage to the heavy zinc coating.

Licensed Manufacturers

American Sheet and Tin Plate Company (Subsidiary of U. S. Steel Corporation), Pittsburgh, Pa.
Apollo Steel Company, Apollo, Pa.
Bethlehem Steel Company, Bethlehem, Pa.
Columbia Steel Company (Subsidiary of U. S. Steel Corporation), San Francisco, Cal.
Continental Steel Corporation, Kokomo, Ind.
Granite City Steel Company, Granite City, Ill.
Gulf States Steel Company, Birmingham, Ala.
Inland Steel Company, Chicago, Ill.
The Newport Rolling Mill Company, Newport, Ky.
The Reeves Manufacturing Company, Dover, Ohio
Republic Steel Corporation, Youngstown, Ohio
Tennessee Coal, Iron & Railroad Company (Subsidiary of U. S. Steel Corporation), Birmingham, Ala.
Wheeling Corrugating Company, Wheeling, W. Va.
Wheeling Steel Corporation, Wheeling, W. Va.
The Youngstown Sheet and Tube Company, Youngstown, Ohio

American Zinc Institute Service

Additional information concerning SEAL OF QUALITY HEAVY-COATED GALVANIZED SHEETS gladly furnished on request.

The services of the American Zinc Institute are available without charge to anyone interested in the utilization or application of zinc or zinc products.



"Seal of Quality" Heavy-Coated Galvanized Sheets on plant of Consolidated Aircraft Corporation, San Diego, California

BERGER BROTHERS COMPANY

Gutter Hangers and Conductor Pipe Fasteners

229-237 Arch Street, PHILADELPHIA, PA.

Products

GUTTER HANGERS and CONDUCTOR PIPE FASTENERS, of malleable iron, wrought iron, cast "tuf-bronze" and copper channel.

Also a general line of Sheet Metal Workers' Requirements; "Shurlock" Conductor Pipe and "E-Z" Fit Eaves Trough; "Quaker City" lines of Mitres, Ends, Caps and Outlets.

Manufacturers of Octagon and Polygon Conductor Pipe; "Rival" Eaves Trough Strap Hanger.

The Mark of Quality Which Protects the Purchaser

We are the originators, designers and manufacturers of, we believe, the best grade of gutter hangers and conductor pipe fasteners on the market.



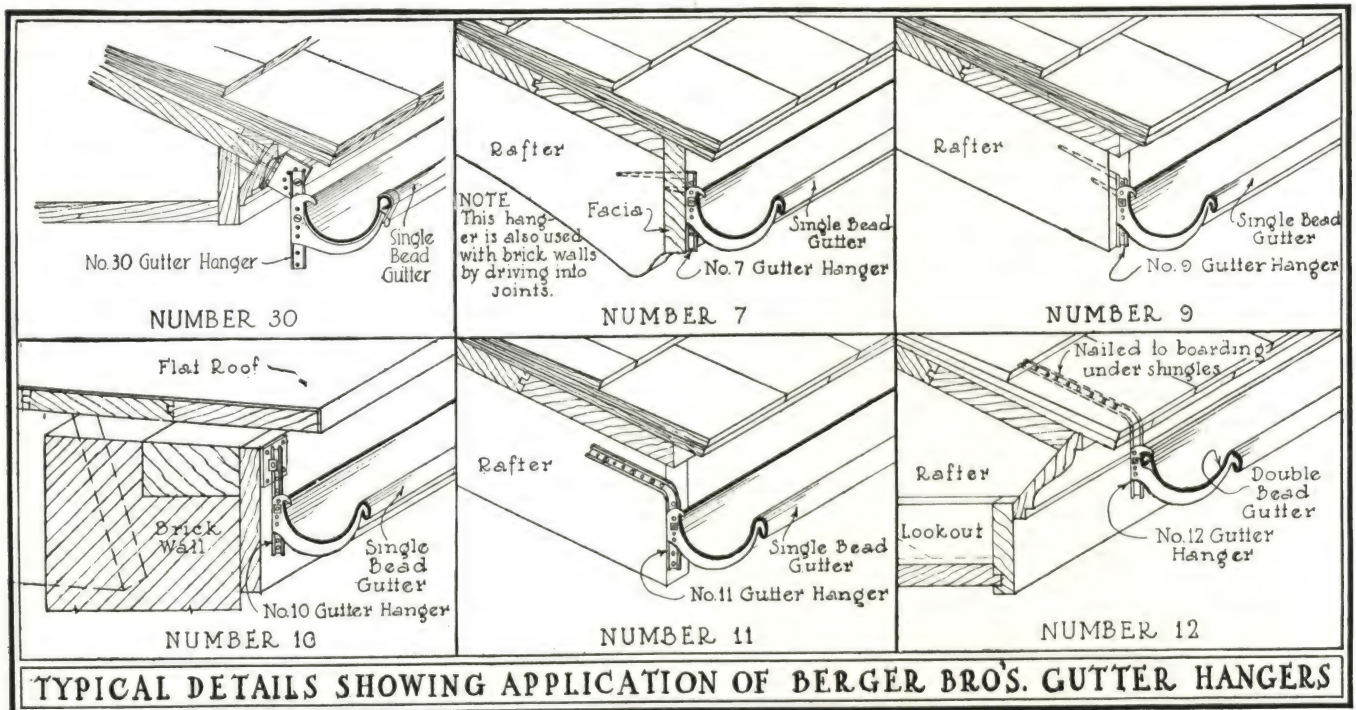
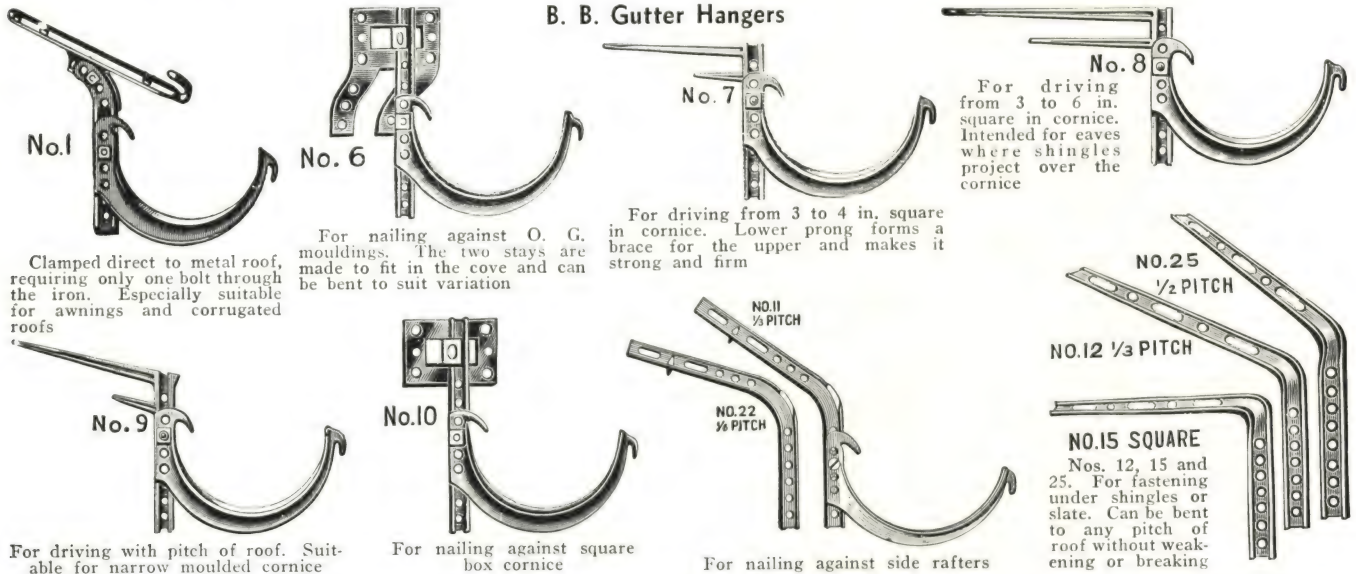
Our registered trade-mark appears on all products manufactured by us. This mark represents dependability, durability and strength and protects the purchaser against inferior imitations.

When specifying, full protection is assured by insisting that our trade-mark appear on every piece.

How Furnished—Made of malleable and wrought iron, plain or tinned (plain furnished unless otherwise specified), cast "tuf-bronze" and copper channel. All shanks and circles interchangeable. One bolt included with each hinged shank. Hinged shanks are adjustable to any pitch of roof. Shanks may be lengthened with our extension shanks.

Free samples on request.

B. B. Gutter Hangers



B. B. Gutter Hangers

Made of malleable and wrought iron, plain or tinned (plain furnished unless otherwise specified), solid cast bronze and copper channel. All shanks and circles interchangeable. One bolt included with each hinged shank. Hinged shanks are adjustable to any pitch of roof. Shanks may be lengthened with our extension shanks. Free samples on request.

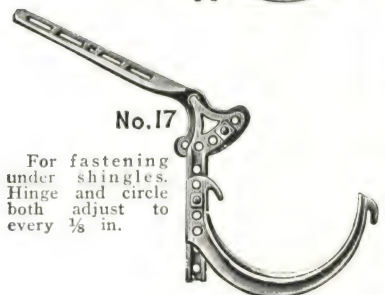


No. 16
For fastening under shingles

For nailing or screwing to shaped mouldings at any angle desired. Hinged for any pitch of roof



No. 20



No. 17
For fastening under shingles. Hinge and circle both adjust to every 1/8 in.



Gem Gutter Circle

For single bead gutters. Sizes, 3 1/2, 3 3/4, 4, 4 1/2, 5, 6, 7 and 8 in.

Penn Gutter Circle

For double bead gutters. Sizes, 3 1/2, 4, 4 1/2, 5, 6, 7 and 8 in.

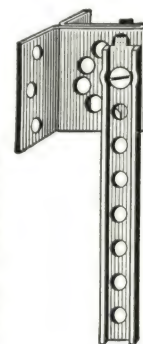
Circles are applicable to any B. B. hanger

Right:

No. 30 Utility Shank

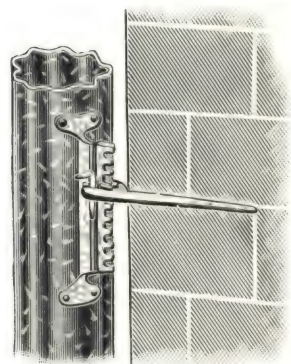
Has twelve different and distinct adjustments. Will take the place of Nos. 1, 5, 6 and 20 shanks and in many instances No. 10. For use with all types of O. G. moulding. Roof overhang does not interfere with nailing due to proper angle of plate.

Circle adjustment permitted the full length of shank stem. Invaluable for use as a brace where shanks are subject to unusual strain



Pipe Fasteners

For fastening all kinds of conductor pipes any distance from wall. Used in any position and allow enough variation to let pipe slip together until tight in the joints. Needs no close measuring on wall to find a joint for the drive.



No. 0



No. 1



No. 2



No. 3



No. 5



No. 6



No. 4



No. 7

No. 0. For brick, 3 in.
No. 5. For wood, 5 in.

No. 1. For brick or stone, 4 1/2 in.
No. 6. To nail on wood.

No. 2. For stone, 6 in.
No. 7. To screw in wood.

No. 3. For stone, 9 in.

No. 4. For wood, 3 in.

Clasp Pipe Hooks

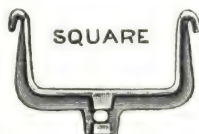
For fastening conductor pipe to wood, brick or stone any distance from wall. Length drives: 3 and 5 in. for wood; 4, 6 and 9 in. for brick and stone.



ROUND



CORRUGATED



SQUARE

4 INCH

6 INCH

9 INCH

3 INCH

5 INCH

B. B. Conductor Pipe Fasteners and Hooks of Tinned Malleable Iron and of Cast "Tuf-Bronze"



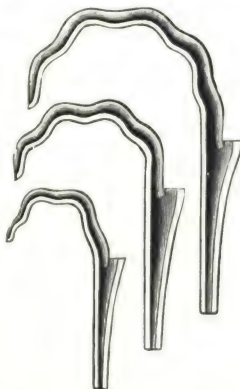
Round Corrugated Hinged Pipe Hook
With wood and brick drive. Sizes, 2, 3, 4, 5 and 6 in.



Plain Round Hinged Pipe Hook
With brick drive in 2, 3, and 4 in., and wood drive in 2, 3 and 4-in. sizes.



Plain Sickle Pipe Hooks
With wood and brick drive. Sizes, 2, 3, 4, 5 and 6 in.



Corrugated Sickle Pipe Hooks
With wood and brick drive. Sizes, 2, 3 and 4 in.



Square Wired Pipe Hook
With wood and brick drive. Sizes, 3, 4, 5 and 6 in.



Round Wired Pipe Hook
With wood drive. Sizes, 3 and 4 in.

BETHLEHEM STEEL COMPANY

Bethlehem Galvanized Sheets

GENERAL OFFICES
BETHLEHEM, PA.

Products

BETHLEHEM GALVANIZED SHEETS, BETHLEHEM HOT-ROLLED and HOT-ROLLED ANNEALED SHEETS.

BETH-CU-LOY (copper-bearing) Galvanized Sheets. Also BETH-CU-LOY Hot-Rolled and Hot-Rolled-Annealed Sheets.

FORMED PRODUCTS; including Corrugated Sheets, Roll Roofing, and V-Crimped Roofing, either black, galvanized or painted, can be supplied in all standard sizes and gauges, either in Beth-Cu-Loy (copper-bearing) or regular Bethlehem Open-Hearth Sheets.

Also, Special-Finish Sheets, Cold-Rolled Sheets, Hot-Rolled Sheets, Hot-Rolled-Annealed Sheets, Furniture Sheets, Automobile Sheets.

For pages on Bethlehem Structural Shapes, see File Index.

Description and Uses

Because of their soft, thoroughly annealed base, Bethlehem Galvanized Sheets are easy to form, are just the sheets for double-seaming. When used in duct work Bethlehem Galvanized Sheets take the severest bending operations with ease. They are of uniform gauge, and are sheared accurately to size. Further, their bright, evenly spangled galvanizing makes them attractive in appearance. And it is a good heavy coating of galvanizing, so tightly put on that it does not crack or scale when the sheets are bent.

Bethlehem Hot Rolled (blue-annealed) sheets are the ideal sheets to use when a certain amount of stiffness is desirable, as for heavy machinery guards, hoods and light tanks.

Bethlehem Hot-Rolled Annealed (black) sheets have good surface finish and, because of their softness and ductility, lend themselves readily to fabricating when used for such purposes as metal boxes and door bucks. They stand up to double-seaming operations without cracking.

Bethlehem Hot-Rolled and Hot-Rolled Annealed Sheets can be furnished made of copper-bearing steel for rust-exposed uses.

Beth-Cu-Loy Galvanized Sheets contain from 0.20% to 0.30% copper, an amount that assures maximum resistance to atmospheric corrosion. For all sheet metal work, whether on the outside of a building or the interior, these sheets provide exceptional durability at low cost. By actual test copper-bearing steel sheets outlast sheets of ordinary steel under exposure to atmospheric corrosion by from two to two and one-half times, yet they cost only a trifle more.

Advantages of Beth-Cu-Loy

Through their use in place of iron or steel sheets for which substantial premiums are charged, Beth-Cu-Loy Sheets offer the opportunity for important savings. Of course their rust-defying property is the important feature of Beth-Cu-Loy sheets. But they have other characteristics commending them to the sheet metal worker.

Because of soft, easy-forming qualities Beth-Cu-Loy lends itself to economical fabrication for all types of sheet-metal construction—for cornices, furnace work and countless other applications. The easy-forming and fabricating qualities of Beth-Cu-Loy Sheets are the result of the use of the most



suitable raw materials and rigid control of every step of manufacture.

The Beth-Cu-Loy trade-mark appears on every Beth-Cu-Loy Sheet.



Specifications

"All sheet metal work shall be of Bethlehem sheets, manufactured by the BETHLEHEM STEEL COMPANY, Bethlehem, Pa."

For such applications as cornices, downspouts, ventilators and air ducts a 24-gauge sheet is sufficiently heavy under average conditions of exposure to weather or dampness.

For roofing, 26, 24 or 22 gauge may be used. The prevailing atmospheric conditions should be taken into consideration in exposed applications. When salt air is encountered, or a smoky atmosphere, the heavier gauges are desirable.

Formed Products

In addition to flat sheets, formed products, either black, galvanized or painted, can be supplied in all standard sizes and gauges, made of Beth-Cu-Loy (copper-bearing) or regular Bethlehem open-hearth steel.

Corrugated Sheets—Made with 1¼, 2, 2½ and 3-in. corrugations in standard lengths of from 5 to 12 ft., inclusive, in even gauges from 16 to 28, inclusive and also 29 gauge.

V-Crimped Sheets—Made in 2, 3, and 5 crimps, even gauges from 20 to 28, inclusive, and also 29, in standard lengths of from 5 to 12 ft., inclusive.

Roll Roofing—Galvanized Bethlehem or Beth-Cu-Loy (copper-bearing) Roll Roofing is furnished in rolls containing 50 lin. ft., each having a covering area of 100 sq. ft. Even gauges 24 to 28, inclusive and also 29. Standard full width, 26½ in. It is covered with a tight coating of high grade spelter which will not crack or flake under proper handling.

In the manufacture of this roofing, special attention is given to accurate shearing, making for perfect alignment. Cross locks are single or double seamed, as ordered.

Literature

We have prepared a booklet of filing cabinet dimensions which contains complete information regarding the many purposes for which Beth-Cu-Loy and Bethlehem Galvanized Sheets are suited, and also an account of the rust-resistance tests conducted by the American Society for Testing Materials. A copy will be mailed for the asking.



Knickerbocker Village Apartments, New York, N. Y.

Ventilating ducts made of Bethlehem Galvanized Sheets; door bucks, medical cabinets and radiator covers made of Bethlehem Hot-Rolled Annealed Sheets.

CHASE BRASS & COPPER CO.

—INCORPORATED—

SUBSIDIARY OF KENNECOTT COPPER CORPORATION

WATERBURY, CONN.

CHASE WAREHOUSES

NEW YORK, N. Y.
BOSTON, MASS.
NEWARK, N. J.
PHILADELPHIA, PA.

BALTIMORE, MD.
PITTSBURGH, PA.
CINCINNATI, OHIO

CLEVELAND, OHIO
DETROIT, MICH.
CHICAGO, ILL.

MILWAUKEE, WIS.
MINNEAPOLIS, MINN.
ST. LOUIS, MO.

NEW ORLEANS, LA.
LOS ANGELES, CAL.
SAN FRANCISCO, CAL.
SEATTLE, WASH.

For Other Chase Pages, see File Index

CHASE COPPER ROOFING MATERIALS



Round Corrugated Downspout



Square Corrugated Downspout

Products

COPPER DOWNSPOUTS, ELBOWS, SHOES, STRAPS, STRAINERS, HEADS.

COPPER GUTTERS, MITERS, END PIECES, CAPS, OUTLETS and HANGERS.

SHEET COPPER, COPPER NAILS.

THRU-WALL COPPER FLASHINGS.

Also, Snow Guards; Copper Ridge Caps, Rolls, Valleys and Flashings; Brass and Bronze Railings; Grilles; Ornamental Wire Work.

Thickness of Copper for Exposed Work

For exposed sheet metal work, 16 oz. to the square foot is the lightest weight copper that will give satisfactory service. Based on this premise which has been carefully checked by eminent authorities over long periods of time and under varying conditions of actual service, Chase Standard Copper Roofing Accessories are made only of full 16-oz. copper sheet. Heavier weights can be furnished to special order but we do not advocate nor make anything *lighter* than 16 oz.

As our guarantee of full weight and also to facilitate inspection of a completed installation, we indelibly die-stamp every length of our downspouts and gutters, "Chase 16 Oz. Copper."

Chase Copper Fittings and Small Accessories

Copper elbows, shoes, gutter miters, end caps,



Copper Downspout Strap



Plain Elbow



Corrugated Elbow

wire strainers, downspout straps, gutter hangers, nails, etc., are also carried in our warehouse stocks ready for immediate shipment.



CHASE

Stock Downspouts

There are three types and five sizes of Chase Copper Downspouts available for immediate shipment from our warehouse stocks: Plain round, corrugated round and corrugated square.

All of these types, except corrugated square which runs only to 5 in., are carried in 2, 3, 4, 5 and 6-in. diameters, in 10-ft. exact lengths.

Stock Downspout Heads

Where strict economy must be practiced any of the following stock patterns of Chase Copper Downspout Heads are acceptable for the average building. Quantity production permits very reasonable prices on these stock patterns, all of which are available for immediate shipment from our warehouse stocks.

All of the heads listed below are available with either round or square outlets. Any of these stock patterns can also be supplied lead coated with only a few days' delay.



Fleur-de-lis Pattern



Diamond Pattern

Copper Downspout Heads

No.	Pattern	Dimensions, in.			
		Outlet	Face	Depth	Height
1A	Large diamond.....	2x3	10	6	9
1B	Large diamond.....	3x4	11	6 1/2	9
2A	Small diamond.....	2x3	9	5 1/2	7 1/2
2B	Small diamond.....	3x4	10	6	7 1/2
3A	Fleur-de-lis.....	2x3	9	5 1/2	7 1/2
3B	Fleur-de-lis.....	3x4	10	6	7 1/2

Stock Gutters

Single bead, lap joint, half round 16 oz., 10-ft. lengths, 4, 5 and 6-in. diameters, and Type K box gutter in 10 and 12-in. girth are standard stock types.

Double bead and slip joint types, also "OG" and other special patterns can be furnished promptly to order.

Lead Coated Sheets and Accessories

All Chase Copper Roofing Materials and Sheet Copper can be furnished lead coated. This is particularly desirable when a neutral gray coloring is required.



Single Bead, Lap Joint, Half Round Gutter

MEMORANDA

LYON, CONKLIN & CO., INC.

ESTABLISHED 1860

Manufacturers and Distributors of Lyonore Metal Products

MAIN OFFICE AND PLANT

McComas at Hanover Street Viaduct
BALTIMORE, MD.

BRANCH OFFICE: 930-932 E Street, N. W., WASHINGTON, D. C.

Products

GALVANIZED SHEETS, BLACK SHEETS, CORRUGATED and FORMED ROOFING SHEETS, GALVANIZED ROLLED ROOFING, "LYON BRAND" 40-LB. COATED ROOFING TIN, CONDUCTOR PIPE and EAVES TROUGH ELBOWS.



United States Capitol

Lyonore Metal specified and used for ventilating ducts in both wings of one of the best known buildings in the world

Why You Should Specify Lyonore Metal Chromium-Nickel-Iron Alloy

Lyonore Metal is iron alloyed with chromium and nickel. It is made according to a formula which provides in a commercially practical sheet metal, remarkably high resistance to atmospheric corrosion. Its principal elements, chromium and nickel, have long been known by metallurgical science to be able to withstand longer than any other semi-precious metals the destructive attacks of time and weather. In the manufacture of Lyonore Metal, its elements are so proportionately and homogeneously combined that they are not unduly influenced by electrolysis. As a result, Lyonore Metal is exceptionally long-lived—and, figured over any period of years, costs much less to install than other sheet metals of similar character.

Uses

Lyonore Metal has been specified and used by architects and engineers for all sheet metal work—ventilating ducts, dust collector systems, smokestacks and breechings, flashing, roofing, elevator shaft linings, metal buildings, etc.—in many of the finest office and public buildings, hotels, hospitals and schools along the Atlantic Seaboard. It is used for countless industrial purposes such as canopies, vat linings, air conditioning systems, factory roofing and siding, etc. Galvanized Lyonore Metal and Lyonore Metal base tin plate is widely used for roofing, conductor pipe, eaves trough, flashing, etc., on private dwellings of every description. Lyonore Metal is generally adaptable to any sheet requirement.



Identification

For positive identification, each sheet of galvanized Lyonore Metal is stenciled with the accompanying trade mark in red three times diagonally lengthwise. Each length of pipe, gutter and fittings is die-stamped "Lyonore Metal" and gauge.



Sizes

Lyonore Metal Galvanized Flat Sheets are available in all standard widths, lengths and gauges. For ventilating ducts and dust collector systems, the following table of sizes and gauges is recommended:

16-in. diameter and smaller.....	No. 26 gauge
17 to 30-in. diameter.....	No. 24 gauge
31 to 40-in. diameter.....	No. 22 gauge
41 to 60-in. diameter.....	No. 20 gauge
61-in. and over diameter.....	No. 18 gauge

Lyonore Metal Corrugated Sheets are furnished in all standard gauges and lengths from 5 to 12 ft.; standard corrugations are $\frac{5}{8}$, $1\frac{1}{4}$, 2, $2\frac{1}{2}$, 3 and 5 in.—although $1\frac{1}{4}$ and $2\frac{1}{2}$ in. are usually specified—covering width is 24 in.

Galvanized Lyonore Metal is also available in Pressed Standing Seam, V-Crimped, Weatherboard Siding, Beaded Ceiling, Brick and Stone Siding, etc.

Lyonore Metal Conductor Pipe and Eaves Trough

Conductor Pipe—Made in 10-ft. lengths in six styles: Plain round and square, corrugated round and square, crimped round and square. Ends are deeply crimped to slip easily into place and to bind snugly and tightly when fitted. Furnished in gauges 28, 26, and 24—each length die-stamped with the gauge and, for quick identification, "Lyonore Metal, an alloy."

Eaves Trough—Made in 10-ft. lengths in a wide variety of styles: Single or double bead—slip or lap joint—gauges 28, 26 and 24—each length plainly die-stamped with the gauge and "Lyonore Metal, an alloy."



For conductor pipes, hanging gutters, eaves trough.....No. 26 gauge
For cornices and skylights.....No. 24 gauge
For gravel strips and flashings.....No. 26 gauge

Lyonore Metal Base Roofing Tin Plate

"Lyon Brand" has a Lyonore Metal base—carefully selected, perfect sheets—carrying a 40-lb. coating of new tin and new lead—coated by the pure palm oil process. In specifying "Lyon Brand" Tin Roofing, the following is recommended:

All roofing—IC thickness; valleys and gutters—IX thickness.

Long ternes for valleys, wall capping, skylights, secret gutters, pipes, etc.—26 gauge.



For further information, write for Architects' File AIA File No. 12-A-31

THE NEWPORT ROLLING MILL CO., INC.

NEWPORT, KENTUCKY

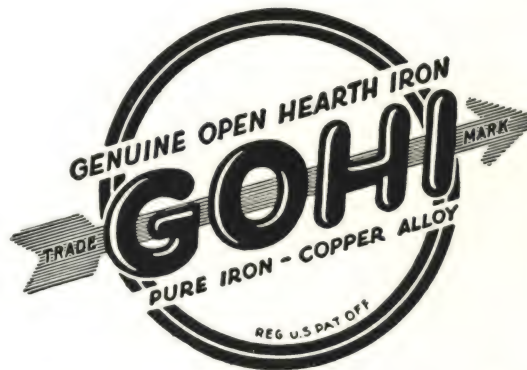
Products

CORRUGATED ARCHES; CORRUGATED AWNINGS; CORRUGATED RIDGE ROLLS; DRI-LAP 5-V CRIMP ROOFING; PRESSED STANDING SEAM ROOFING; PLAIN ROLL ROOFING; ROLL and CAP ROOFING; WEATHERBOARD SIDING; BEADED CEILING; BEADED SIDING; BRICK SIDING; ROCK FACE BRICK SIDING; ROCK FACE STONE SIDING; METAL SHINGLES; PLAIN RIDGE ROLL; CORNICES; LOUVRES; EAVES TROUGH; CONDUCTOR PIPE; ELBOWS and SHOES; MITRES; CUT-OFFS; SKYLIGHTS and METAL CEILINGS.

GOHI PURE IRON-COPPER ALLOY

GOHI Pure Iron-Copper Alloy, identified by the familiar GOHI trade mark, is an outstanding ferrous metal for all building construction. Homogeneous, soft, ductile, GOHI is easy to shape, cut, stamp, bend, seam, draw, form and weld. It lends itself to every sheet metal building need—and offers the maximum life and durability, resistance to wear, weather and corrosion. GOHI gives permanence to the skill and artistry of the architect. It is a long-lived, low-cost ferrous metal.

For more than half a century THE NEWPORT ROLLING MILL Co., INC., has kept pace with every new development and advance in metallurgical science. We believe GOHI is the finest all-purpose ferrous metal produced.



The experience of users of GOHI confirms our judgment, and is conclusive evidence of the superior quality of GOHI.

Further proof of the longevity of GOHI is found in its widespread use in the manufacture of corrugated pipe culverts to protect the billions of dollars of highways throughout the nation. Many of these GOHI Culverts have records of more than a quarter century of service, outlasting the roads under which

they are laid. Frequently these same culverts are relocated to give extra years of service under other highways.

Such is the inbuilt stamina of GOHI Pure Iron-Copper Alloy—the first choice of many architects who specify only the best, who insist upon the highest quality, who wish to give permanence to their work.

ARCHITECTURAL SPECIFICATION BOOK

A wealth of information on GOHI Pure Iron-Copper Alloy—specifications, data and suggestions for the use of this fine metal for all architectural purposes—is con-

tained in this interesting brochure, a valuable, worthy addition to your library, which will be sent on request with a leatherette folder containing sample gauges of GOHI.

ACCELERATED CORROSION TEST

The accelerated corrosion test, a chart of which is reproduced below, illustrates in a striking way the resistance of GOHI—pure iron-copper alloy. These materials were put into a bath of sulphuric acid and

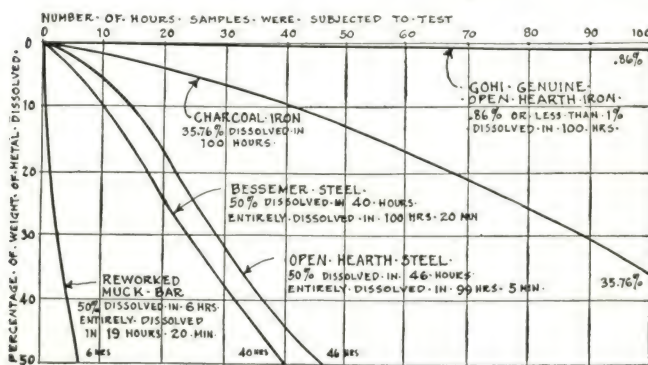
allowed to remain completely immersed for a period of one hundred hours. As may be seen from the chart, only 0.86 per cent of GOHI—Pure Iron-Copper Alloy—was consumed in this period, while the only other metal which remained at all at the end of the test weighed 35.76 per cent less.

The long life of GOHI and its many outstanding qualities make it a logical choice for every sheet metal use.

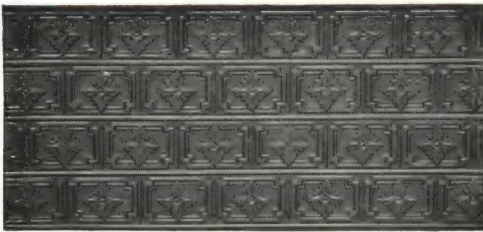
Typical GOHI Analysis

Carbon	.010
Manganese	.025
Sulphur	.025
Phosphorus	.004
Silicon	.003
Iron and copper by difference	99.933%

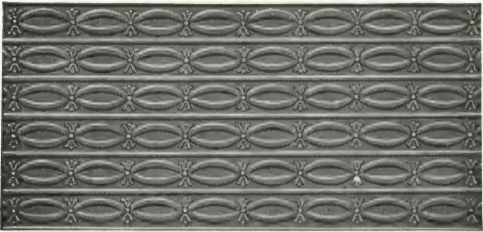
We guarantee the presence of at least .20 per cent copper.



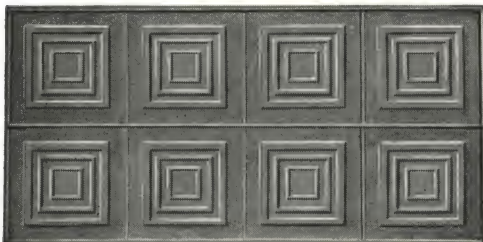
ACCELERATED CORROSION TEST ON GOHI AND OTHER METALS



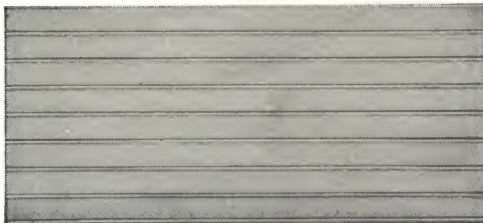
Style "A" Ceiling



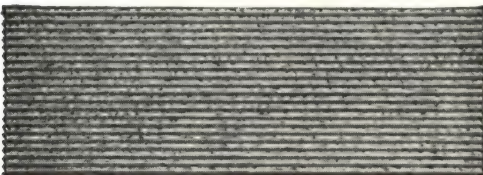
Style "B" Ceiling



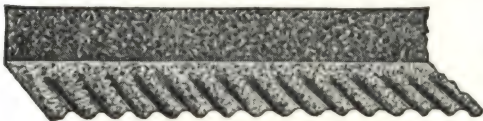
Style "C" Ceiling



Style "D" Ceiling



1 1/4-in. Corrugated Sheet



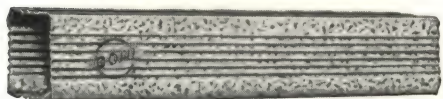
Flashing



Plain Round Conductor Pipe



Corrugated Round Conductor Pipe



Corrugated Square Conductor Pipe

The GOHI trade mark is one of the best known in the sheet metal industry. It identifies sheets and fabricated products designed to afford maximum protection to buildings, to add beauty and durability, to effect sharp economies in building costs.

Uniformity in metal structure, trueness to gauge, unvarying density of spelter coating, proven resistance against wear, weather and corrosion, are outstanding characteristics of GOHI, making it a logical choice of architects and sheet metal contractors whether the requirement is a sheet or a carload, a length of conductor pipe or material for the largest job.

GOHI is a practical, versatile metal. It asks no special favors. It requires no special handling. It is easily worked. It involves no high fabrication costs or extra hours of labor. On the job it stays "put" and gives the lowest cost per year protection and service. Measured by any standard, GOHI Pure Iron-Copper Alloy is, we believe and claim, the one ferrous metal you can safely trust under all conditions. It is the pure iron alloyed with the right quantity of copper that gives GOHI its unusual life, the ability to stand up under severest punishment and give years of uninterrupted, trouble-free service.

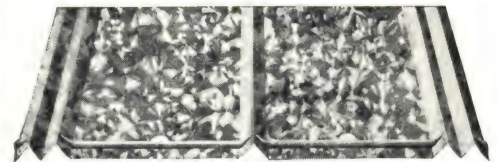
Jobbers, dealers and hardware companies everywhere sell GOHI sheets and formed products. A list of dealers and distributors will be furnished on request.

Insist on GOHI

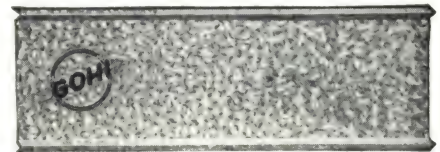
The name GOHI is descriptive of the metal itself—Genuine Open Hearth Iron. Produced for more than a quarter of a century on the same basic, unchanged formulae, GOHI is every day proving its longevity wherever sheet metal is used. Look for the trade mark—it is your protection and guarantee of superior metal.



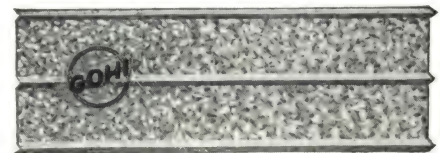
GOHI Pure Iron-Copper Alloy made exclusively by THE NEWPORT ROLLING MILL CO., INC., Newport, Kentucky.



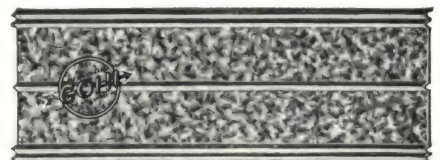
DRI-LAP 5-V Crimp Roofing



2-V Crimp Roofing



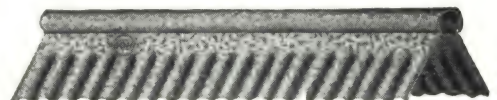
3-V Crimp Roofing



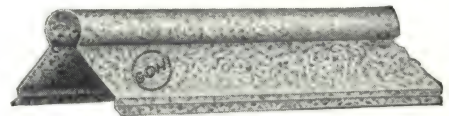
5-V Crimp Roofing



Weatherboard Siding



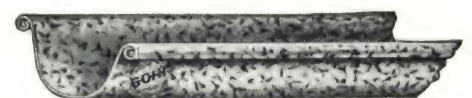
Corrugated Ridge Roll



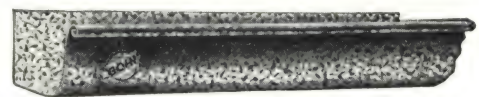
Plain Ridge Roll



Formed Valley



Eaves Trough



O. G. Gutter

REVERE COPPER AND BRASS INCORPORATED

EXECUTIVE OFFICES AND GENERAL SALES DEPARTMENT

230 Park Avenue, NEW YORK, N. Y.

DIVISION OFFICES AND MILLS

BALTIMORE DIVISION, Baltimore, Md.
BALTIMORE TUBE CO., DIVISION, Baltimore, Md.

DALLAS DIVISION, Chicago, Ill.
TAUNTON-NEW BEDFORD DIVISION, New Bedford, Mass.

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ROME DIVISION, Rome, N. Y.

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CLEVELAND, OHIO, 1127 Midland Bldg.
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MINNEAPOLIS, MINN., 724 Metropolitan Bank Bldg.
NEW ORLEANS, LA., 437 Decatur St.

NEW YORK, N. Y., 75 East 45th St.
PHILADELPHIA, PA., 17th & Sansom Sts.
PITTSBURGH, PA., 727 Gulf Bldg.
PROVIDENCE, R. I., 1215 Industrial Trust Bldg.
ST. LOUIS, MO., 1010 Pine St.
SAN FRANCISCO, CALIF., 562 Russ Bldg.
SEATTLE, WASH., 317-318 Pioneer Bldg.

Products

REVERE SHEET, STRIP and ROLL COPPER and REVERE LEADTEX (Lead-Coated Copper) for roofing, flashing conductor pipes and ornamental work.

For Revere Brass Pipe, Revere Copper Water Tube and Architectural Metals in Sheets, Extruded and Drawn Shapes and Tubes, Revecon System and Herculoy, see File Index.

REVERE SHEET COPPER

Revere Sheet Copper, with over a century of reputation for quality, is made by Revere Copper and Brass Incorporated, and marketed under the Revere Red, White and Blue Label.

Revere makes every type of sheet copper in use today, including plain copper, in soft and hard tempers, lead-coated copper, nickel and chromium plated copper, and tinned copper.

Sheet Copper for Roofing

Revere Sheet Copper is the ideal roofing material. Because it cannot rust, and because of the absolute protection it affords under all types of weather conditions, it is also an economical material.

It does not require painting or protective treatment; the first cost is the only cost involved. For these reasons, the ideal roof is one in which copper is used throughout.

However, where the preference of the home owner or style of architecture dictates roofs of other materials—such as slate, shingles, or composition shingles, clay or cement tile—Revere Sheet Copper also plays an important part.

Flashings, valleys, ridges, cornices, gutters, eaves troughs and conductor pipes should be constructed of Revere Sheet Copper to insure maximum protection against weather.

Soft Copper (Roofing Temper)

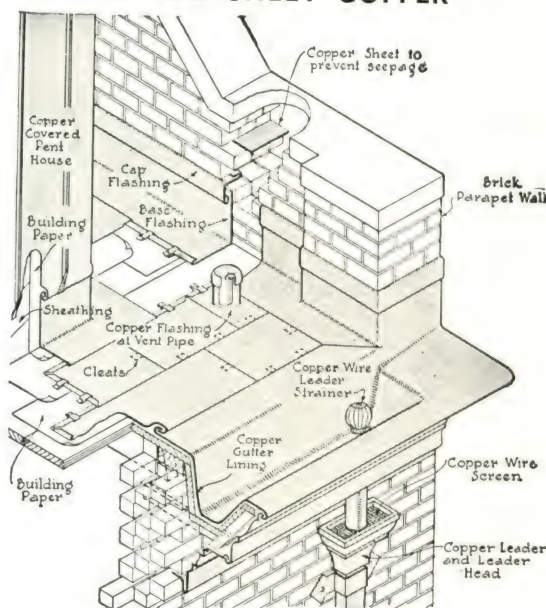
Soft or (Roofing Temper) Copper should be used for roofing purposes and all flashings regardless of type. This type of copper is particularly suitable for these uses inasmuch as it is easily worked and shaped and stands up well under temperature stresses. There is no place in flashing—or counter flashing—where soft sheets will not serve better than hard copper. The latter does not lend itself so readily to shaping on the job.

Hard Copper (Cornice Temper)

The material of all shaped gutters, eaves troughs, drips, waterbars, leaders, cornices, etc., should be hard (cornice temper) copper. Its stiffness is necessary to maintain the shape, especially against ice and snow loads. As most shapes are of mill manufacture, the process is such that the chance of fracture at the bends is minimized. All manufacturers of gutters, leaders, etc., make them of hard (cornice temper) copper because experiment and experience have proved the practicability of this.

Parallel Edge Strip Copper

Revere Parallel Edge Strip Copper is recommended particularly for conductor pipes of all kinds including gutters, leaders, etc. This product, free from waves and wrinkles and correctly tempered, with edges parallel, is furnished in lengths of 10 feet and



in widths from 6 to 18 inches inclusive, which makes for economy in forming. Each strip of the 16 ounce material is stamped "Revere—Standard 16 oz."

Decorative Copper Work

Practically any design in relief can be executed in copper. For examples of its use, see the illustrations of ornamental lead-coated copper on the following pages on Leadtex.

Enameled Copper

Porcelain enamel (Crystal-Cote) may be applied to Revere cold rolled copper. The range of colors and tones possible on copper are practically unlimited, and a color can be selected which will blend with any decorative scheme. Revere porcelain enameled copper is suitable for both outdoor and indoor use. In case of accidental chipping of the enamel coating, the danger of the coating being further destroyed through rust formation is eliminated where copper is used as the base metal.

per is used as the base metal.

Gutter Linings and Cornice Ornaments

Gutter linings and cornice ornaments are exceptions to the above rule concerning the use of soft and hard temper copper. They should be made of soft (roofing temper) copper.

Gutter linings in any length are peculiarly subject to temperature stresses. The continual warping to which the sheets are subjected is likely to cause failure by fatigue at the bends when hard copper is used. Soft copper overcomes this cause of failure.

For ornaments that are stamped from dies, soft copper is superior to hard copper, for the former works more easily and is less liable to fracture.

Specifications

Copper for flashing and roofing shall be Revere standard 16 oz. (20 oz. or other weights) soft (roofing temper) copper and shall be rolled from cakes complying with the A. S. T. M. requirements for Electrolytic copper. Copper for cornice work, gutters, eaves troughs, downspouts (leaders), shall be Revere Standard 16 oz. (20 oz. or other weights) Hard (Cornice Temper) copper.

Sources of Supply

Revere Sheet Copper is readily and quickly obtained through authorized distributors in all parts of the country.

Literature

We will be pleased to mail you a copy of "Sheet Copper," a handbook, prepared especially for architects and roofing contractors, covering the application of this product in the construction of buildings.

Samples

Samples of sheet copper in any of the following finishes will be gladly sent to architects upon request—plain soft or hard, nickel plated one side, chromium plated, tinned one side, Leadtex (lead-coated copper).

REVERE LEADTEX

(Lead-Coated Copper)

In Which Are Combined the Workability, Light Weight, Permanence and Economy of Sheet Copper with the Mellow Color, Decorative Range and Protecting Finish of Lead

The Exceptional Architectural and Artistic Qualities of Leadtex

For hundreds of years lead has been used by architects for many purposes. It has been known and admired for its decorative and easily workable qualities for exterior ornaments, roofs, leaders, leader heads, gutters, flashings, etc. The patina which lead takes, when exposed to the weather, has a soft neutral tone which harmonizes with almost any material and color scheme. Leadtex, being coated with lead, will naturally take on a weathered finish similar to that of lead.

What Leadtex Is

Revere Leadtex is Revere Sheet Copper, coated with lead. The Copper, a rust proof metal in itself, is further protected against corrosion and staining by the non-rusting coating of lead. This provides the architect with a light, flexible and practically ever-lasting sheet metal at a minimum cost.

The Special Advantages of Leadtex

Leadtex possesses the advantage of the old lead work with some important additional features.

The Finish—Is similar to lead as far as weathering and lasting qualities are concerned.

Stiffness—On account of the additional strength and stiffness given by the copper, Leadtex can be used in light gauges of metal in the same manner and for the same purposes that copper has always been used.

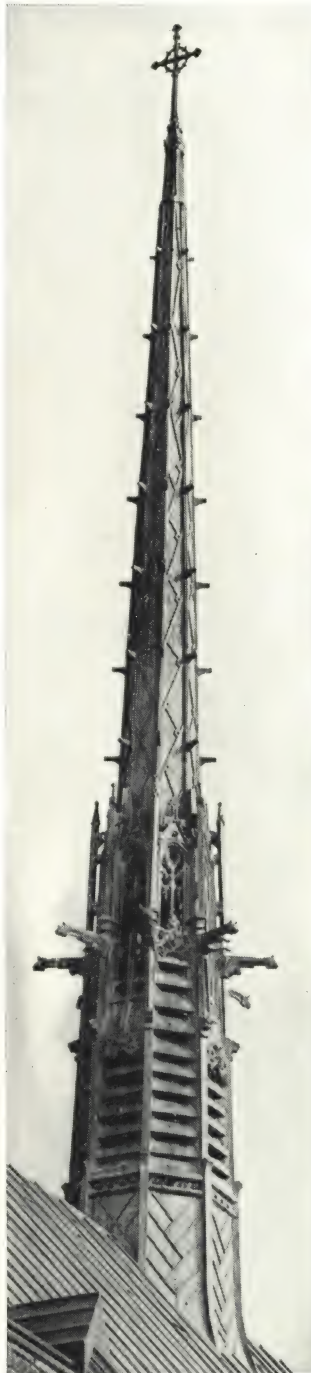
Lightness—Its lightness reduces the weight of construction in many instances such as on roofs, domes, spandrels, and ornamental motifs. This is an important consideration in modern building construction. The use of Leadtex for spandrels is very well illustrated in the photographs of spandrel panels on this and following page.

Non-staining—The lead coating prevents the action of the elements on the copper which sometimes causes the green staining of other materials with which it is used, as for example near salt water or where exposed to the action of sulphur fumes from smoke stacks. It is recommended that Leadtex be used as flashing, if in contact with stone, marble, stucco, or cement work.

Relief and Ornament—The depth of relief as well as delicacy of detail possible with Leadtex is readily appreciated in the accompanying illustrations. Leadtex can be formed or stamped in the same manner as copper without breaking the lead coating. The lead coating acts as a lubricant with the result that stamping is even more easily accomplished with Leadtex than with plain copper sheets.

Where, because of design, it is essential to anneal the sheet between stamping operations, uncoated copper should be used and the lead coating applied following completion of the stamping.

Cost—The advantage of costing only slightly more than sheet copper makes Leadtex a product of real importance to the architect.



Ornamental Fleche and Batten Seam Roof of Leadtex
Metropolitan M.E. Church,
Washington, D. C.

SUNDT & WENNER, Architects
STOFFLET and TILLOTSON,
General Building Contractor
CHEW-BITTEL COMPANY,
Sheet Metal Contractor
All of Philadelphia, Pa.



Leadtex Spandrel, Hunter-Dulin Building,
San Francisco, California

SHULTZ & WEAVER, Architects, New York
Stampings and Installation by
FORDERER CORNICE WORKS,
San Francisco, Cal.



Leadtex Spandrel, Hunter-Dulin Building,
San Francisco, California

SHULTZ & WEAVER, Architects, New York
Stampings and Installation by
FORDERER CORNICE WORKS,
San Francisco, Cal.



**Leadtex Spandrel, Pellissier Building,
Los Angeles, California**

G. ALBERT LANSBURGH, San Francisco, Cal., and
MORGAN, WALLS & CLEMENTS, Los Angeles, Cal., Architects

Stampings by
LOS ANGELES CORNICE & STAMPING WORKS, Los Angeles, Cal.
Installation by NATIONAL CORNICE WORKS, Los Angeles, Cal.

Leadtex Leaders and Leader Heads, St. Pascal's Church, Chicago

B. J. Hotton, Architect; Raymond Gregori, Associate Architect; Sheet Metal Work by Wagner Bros.
Cornice Co.; Stampings by Friedley-Voshardt Co., all of Chicago, Ill.



Ornamental Frieze of Revere Leadtex, Pellissier Building, Los Angeles, California

Morgan, Walls and Clements, Architect; William Simpson Company, General Contractor; National Cornice Works, Sheet Metal Contractor; Los Angeles
Cornice and Stamping Works, Stamping, all of Los Angeles, Cal.

USES, FINISHES AND TEXTURES OF LEADTEX

Suggested Uses of Leadtex

Leadtex can be used in practically any type of building regardless of architectural style. It insures permanence and quality of construction for:

Roofing	Ornamental motifs
Flashings	Domes
Gutters	Turrets
Leaders	Skylights
Leader heads	Crestings
Cornices	Marquises
Spandrels	Revecon
Store fronts	Panels
Balustrades	Curved surfaces
Dormers	

Types of Finishes and Textures

Leadtex is furnished in a smooth finish, (Leadtex AAA) and three types of texture finishes, (Leadtex Standard Plain Finish and Heavy), (Leadtex Standard-Hammered Finish) and (Leadtex Extra Heavy) which are illustrated at the right.

Leadtex AAA—This type of Leadtex constitutes a distinct advance and improvement in the production of lead-coated copper sheets. The coating is *pure* lead applied by a special process. The surface is smooth and the lead coating uniform throughout the sheet.

Leadtex AAA is not only superior for architectural purposes, but has many industrial uses as well; as for example, industrial roofing where abnormal smoke conditions exist which result in acid corrosion. It is also excellent for flues and ventilating ducts where acid fumes are encountered and for other industrial uses where lead offers definite resistance to corrosive conditions.

Leadtex AAA can be formed and stamped even more easily than other types of lead-coated copper and it also solders satisfactorily.

Where for the sake of design, the metal is to be painted, Leadtex AAA should always be specified. The surface takes lead and oil paint perfectly. No special cleaning or priming coat is necessary which cuts the painting cost.

Leadtex AAA, because of its superior qualities, is recommended for all purposes where lead-coated copper is to be used, unless rough texture is of prime importance.

Leadtex Standard Plain Finish and Leadtex Heavy—These types, as illustrated at the right, have an irregular, raised texture which varies slightly in each sheet.

Leadtex Extra Heavy—This extra heavy coating of lead has a stippled or sanded effect in flat sheets before forming. In working, the stippling is very slightly flattened but still retains its texture.

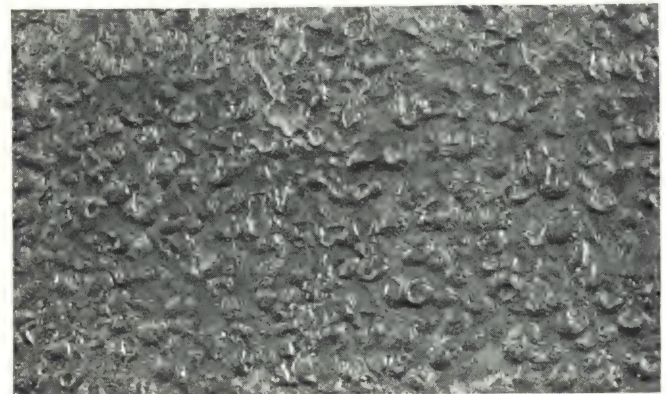
Leadtex Standard-Hammered finish has an all over splatter pattern which gives the effect of depth to the finish.

Color of Leadtex

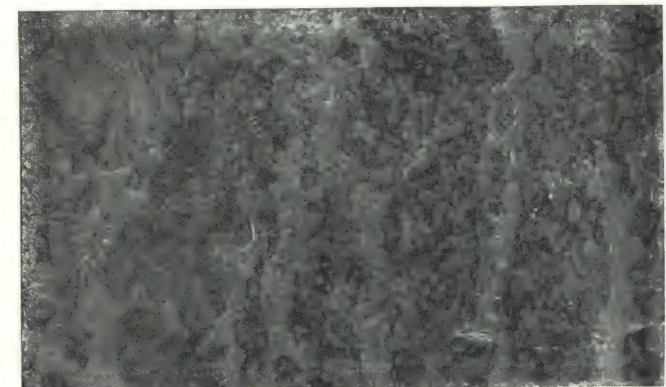
The natural color of Leadtex is a soft, neutral tone which harmonizes well with almost any material and color scheme. It ages beautifully, weathering to a dark antique gray. Where it is desired to have the dark tone from the first, it may be produced by chemical treatment.



Leadtex AAA (uniformly smooth finish)



Leadtex Standard—Hammered Finish



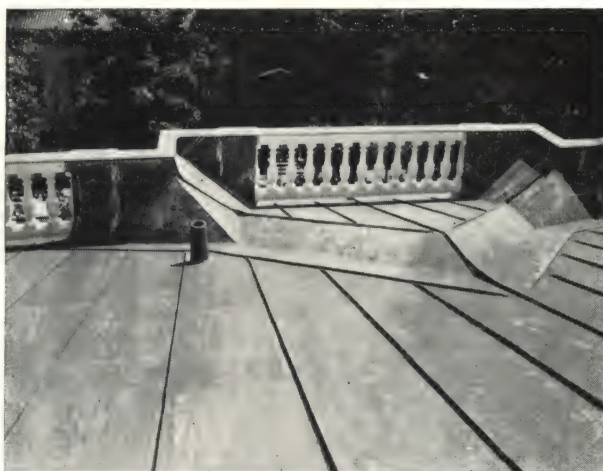
Leadtex Standard—Plain Finish and Leadtex Heavy



Leadtex Extra Heavy



An interesting roof detail of Lead Coated Copper. Standing seam construction throughout.



Los Angeles Branch of Federal Reserve Bank of San Francisco, Calif.

Spandrels and Sheet Metal Work are Revere Leadtex. John Parkinson and Donald B. Parkinson, Los Angeles, Architects; P. J. Walker Co., Los Angeles, General Contractor; and the Forrester Cornice Works, San Francisco, Sheet Metal Contractor.



WGN Broadcasting Studio, Chicago, Ill.

16 oz. Leadtex was used for mansard roof, gutters and turret. John M. Howells, Hood & Foulhoux, New York City, Architect; L. J. Weissenborn, Chicago, Associate Architect; R. C. Weiboldt Company, Chicago, General Contractor; L. H. Sohn Company, Chicago, Sheet Metal Contractor.

WEIGHTS OF COPPER BASE AND COATINGS OF LEADTEX

How to Specify, Etc.

Leadtex—Its Various Weights and Types

Leadtex is made with a copper base of any gauge and temper and in the following weights of lead coatings.

Leadtex AAA—Coated One Side—6 to 7½ lbs. per 100 sq. ft., 12½ to 15 lbs. per 100 sq. ft., or 20 to 25 lbs. per 100 sq. ft. applied to one side of sheet only. Coated Both Sides—foregoing weights *applied to both sides of the sheet*. Other weights upon application.

Leadtex Standard-Plain Finish and Leadtex Standard-Hammered Finish—Coated with approximately 12 to 15 lbs. per 100 sq. ft. applied to *both sides of the sheet* (6 to 7½ lbs. per side). This is the minimum weight of lead coating that should be used on the copper sheet for architectural purposes.

Leadtex Heavy—Coated with approximately 25 to 30 lbs. per 100 sq. ft. applied to *both sides of the sheet* (12½ to 15 lbs. per side).

Leadtex Extra Heavy—Coated with approximately 40 to 50 lbs. per 100 sq. ft. applied to *both sides of the sheet* (20 to 25 lbs. per side).

Copper Base—For architectural purposes made in 16-18-20, 24 oz. and heavier soft or hard copper supplied in the foregoing weights of lead coatings.

Suggested Weights of Leadtex

Specify Leadtex in the same weights and temper ordinarily used for copper, denoting the weight of lead coating as follows:

All.....shall be 16 oz. (or other weights) hard (or soft) copper base, Revere Leadtex (AAA or Standard-Plain Finish or Standard-Hammered Finish or Heavy or Extra Heavy), (single or double face).

Leadtex AAA—For Painting

Where lead-coated copper is to be painted, we recommend the use of Leadtex AAA because of its uniformly smooth surface which makes possible a

good painting job. This does not require the use of any special primer.

Method of Application

The method of applying Leadtex for roofing and other sheet metal work is the same as for plain sheet copper. The same types of seams and solder are used as for plain copper.

Leadtex Spandrels

Spandrels vary in size and method of construction, as well as in the gauge of Leadtex used, depending on the nature of the work in hand. There is also a wide latitude in practice as to method of framing and connecting unit parts, as well as anchoring or securing them in place.

Because of the variety of design of spandrels, etc., specifications will depend on the conditions of each installation.

Leadtex can also be used with Macotta Spandrels.

Revecon System

Leadtex is suited for the Revecon System of construction, either where formed-edge panels or flat sheets are used.

Leadtex Readily Obtainable by the Sheet Metal Trade

Leadtex is distributed throughout the country and is readily and quickly obtained by the sheet metal trade through authorized distributors of Revere products.

Samples and Architectural Service

Samples of Leadtex in its various finishes will be sent gladly to any architect.

We will also assist architects with all problems they may have regarding special details or applications of Leadtex. Our nearest office will answer any communications concerning this or other Revere products.



Leadtex Roof on a Buffalo Residence. The color and texture of Leadtex plus its durability make it an excellent roofing material.

CHASE BRASS & COPPER CO.

—INCORPORATED—
SUBSIDIARY OF KENNECOTT COPPER CORPORATION
WATERBURY, CONN.

For Other Chase Pages, see File Index



CHASE THRU-WALL COPPER FLASHINGS

Chase Thru-Wall Flashing is a flashing installed entirely through masonry walls. It is made of 16 ounce copper with embossed ridges, which are designed to direct the flow of water to the face of the wall. This prevents leaks, plaster stains, peeling paint, efflorescence and expensive rebuilding of parapet walls due to break-down of mortar joints.

Thru-Wall flashing should be ordered lead coated when the flashing is exposed on the outside face of the wall directly in contact with marble, limestone or any light colored stone. Lead coating is also used when a neutral gray color is desired. All Chase Flashing can be furnished plain or lead coated.

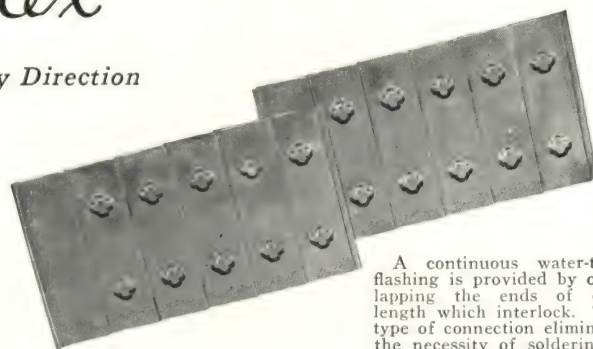
Triplex

Bonds in Every Direction

Chase Triplex Thru-Wall Flashing will meet specifications calling for flashings that will bond in all directions in the mortar bed. It resists all lateral and vertical movement. Chase Triplex flashing consists of a series of "Z" bends which provides perfect drainage, as each "Z" bend forms a weep hole. It also provides for adequate expansion and contraction at each "Z" bend. Flashings providing a mechanical key in all directions are now being specified by most United States Government Departments.

Specifications

All flashing carried through masonry walls shall be Chase Triplex Thru-Wall Copper Flashing as sold by



A continuous water-tight flashing is provided by overlapping the ends of each length which interlock. This type of connection eliminates the necessity of soldering.

CHASE BRASS & COPPER Co., Waterbury, Conn., and shall be placed in the wall with mortar below and on top so that a mechanical bond is obtained in every direction within the mortar bed.

Duplex

Bonds in All Lateral Directions



To provide a continuous flashing, the sheets are installed with an overlap, which forms a water-tight interlocking joint without the use of solder. This method also takes care of expansion and contraction.

When installed, the general design of the Chase Duplex Thru-Wall Flashing provides a bond in all lateral directions. The raised ridges, to prevent right or left movement, are 3 in. apart and run the full width of the sheet. The row of embossings to prevent forward or backward movement are 4 in. apart. The ridges

running the full width of the sheet provide a second advantage, for when a counter flashing is formed, the face, due to the ridges, offers a much greater resistance to being blown up by the wind than plain copper. The pattern or design of Chase Duplex Flashing is formed to prevent the thinning or hardening of the metal at the ridges.

Specifications

All flashing carried through masonry walls shall be Chase Duplex Thru-Wall Copper Flashing as sold by the CHASE BRASS & COPPER Co., Waterbury, Conn. That portion in the wall shall be bonded horizontally at intervals of not more than 3 in. by a series of ribs $\frac{3}{16}$ in. high, and a series of raised projections; the ribs extending the full width of the wall. End joints shall overlap so that a water-tight joint is made without soldering. The flashing shall be formed so as not to cause any accumulation of water on the horizontal surfaces and the transverse bonding ribs shall not be drawn or stretched.

THE CHENEY COMPANY

Cheney Flashing

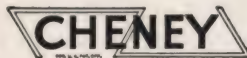
Architects Building, PHILADELPHIA, PA.

FACTORY, 24 North Front Street, New Bedford, Mass.

BRANCH OFFICES, 75 East 45th Street, New York, N. Y.; 2200 North Natchez Ave., Chicago, Ill.; 1536 Baylis St., Baltimore, Md.
NATION-WIDE DISTRIBUTION THROUGH THE WAREHOUSES AND DISTRIBUTORS OF REVERE COPPER AND BRASS INCORPORATED

Products

CHENEY FLASHING; REVERE THRU-WALL FLASHING; CHENEY SHOWER PAN; CHENEY VERTICAL RIBBED SIDING; SPANDO WATERPROOFING; COPPER-KOTE.



CHENEY FLASHING



Cheney Flashing Is Laid Quickly and Easily as the Masonry Progresses. The Ends of the Flashing Interlock to Form a Watertight Joint without Solder



Cheney Flashing Installed on Cornice, Massachusetts Institute Technology. After Five Years' Exposure the Flashing Remains in Perfect Condition



Laying Coping Stone, 86th Story, Empire State Building, N. Y. Note Absence of Dowels. Cheney Flashing Permits Such Installations on Parapets and Copings. It's the Safe Flashing to Use

Service

The CHENEY COMPANY has made a serious study of all kinds of seepage and flashing problems, and the services of our factory and field engineers are always available to architects, and opportunities for being of service are welcomed.

Cheney pioneered and introduced mechanically Keyed Thru-wall Copper Flashing to the Architects and Engineers of America. Millions of feet have been installed in most of the Nation's fine buildings as well as in hospitals, schools, colleges, libraries, apartment and office buildings and industrial plants.

Cheney Flashing is too well known and the need for its use too widely understood to require detailed description of what it accomplishes. Briefly stated Cheney Flashing scientifically solves leak, seepage and drainage problems in masonry walls. It positively prevents leaks and seepage as well as streaks, stains and efflorescence which disfigure a building and many times destroy its Architectural beauty. It also prevents the rusting of spandrels and lintels and in general permanently protects buildings from the destructive effects of water penetration.

The positive efficiency of Cheney Flashing and its superiority of design is recognized without question by all authorities.

Basic Requirements for Really Efficient Flashing

Fundamentally—any Thru-wall Flashing should function in a very definite manner:

- 1st It should form a positive mechanical Key-bond in every direction within the mortar bed—vertically as well as laterally.
- 2nd It should provide perfect drainage so that if moisture should penetrate a wall it will drain quickly.
- 3rd It should provide adequately for expansion and contraction.
- 4th It should have a watertight, interlocking lap that requires no soldering.
- 5th It should have a stiff counterflashing face that hugs the wall tightly after the base flashing has been installed.

All of these features were given careful study and intensive testing, and their positive functionings were thoroughly proved before a single foot of Cheney Flashing was marketed.

Hazards of Improper Bond

The hazard of falling copings and parapets, caused by insufficient bonding, and the legal entanglements that ensue when walls fall from this cause, are too great to "take a chance"—and there have been many such failures in this country during the past few years.

It is highly improbable that the designers of the Empire State Building, New York, would have installed Cheney Flashing under the coping stones of the parapet at the 86th story, and without dowels, had they not been certain that Cheney Flashing formed a positive unbreakable key-bond—vertically as well as laterally with the masonry, and would retain this bond for the life of the building.

The Cheney "Factor of Safety"

Previous to the introduction of Cheney Flashing, architects and engineers had known for years that plain copper, laid between courses of masonry, would prevent water from penetrating building walls.

But, it also was known that such plain metal flashings would break the bond between the courses of masonry and seriously weaken the walls, hence little protection of this sort was ever used.

The invention of Cheney Flashing, however, solved the problem, and its widespread use has been responsible for the production of many new flashings of more or less value. Today however, as in the beginning, Cheney Flashing stands without equal or counterpart in the field. "It does not break the bond."

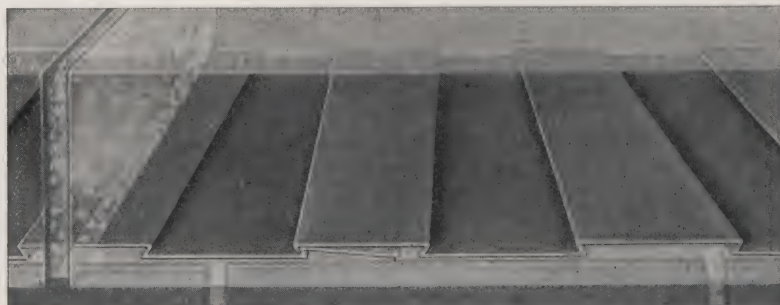
The Keybond construction of Cheney Flashing provides a "Factor of Safety," which includes two exclusive features that cannot be equalled by ordinary flashings; it bonds the masonry both laterally and vertically in every direction, and in addition, its exclusive design provides numerous weep-holes that drain the walls quickly. The design of the flashing also takes care of expansion and contraction.

These Keybond and drainage features are of the utmost importance in proper building construction.

The key bonding is especially important in the construction of high buildings where severe storms, high winds and the natural swaying of the buildings tend to loosen coping stones and parapets and hurl them below with a consequent loss of life or serious damage to people and property.

Flashings that bond only laterally, therefore, should not be specified or used for copings, parapets, cornices or other exposed areas with any confidence that they will provide safe or permanent protection.

The self-draining feature is also particularly valuable, especially in cold weather when it is absolutely essential that water should drain from the walls quickly—before freezing. If permitted, alternate freezing and thawing soon breaks-up the mortar joints, sometimes even the stonework itself, thus greatly weakening the wall.



Masonry Bond Test

Resistance to Rupture is the real test for any wall flashing. Tests made by Prof. Frederick O. Anderegg prove conclusively that Cheney Flashing does make a positive mechanical bond.

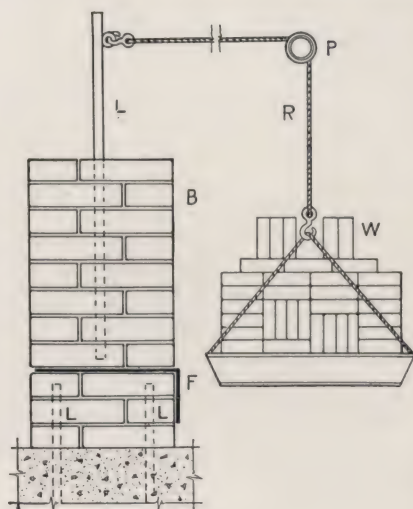
Explanation of Test Diagram

B—12x36x42 in. panel. F—Cheney Flashing. L—Steel angle irons. P—Pulley. R—Rope. W—Weights.

Two tests were conducted, one with Cheney Flashing, one with plain copper. After panel had been exposed to weather for 28 days, weights were added until wall fractured. Test with Cheney Flashing showed wall had a Modulus of Rupture of 27 lbs. per sq. in. compared to 9 lbs. per sq. in. for copper having no vertical bond. Before wall could be pulled over, mortar in Cheney keys had to be sheared off, proving an effective mechanical anchorage.

The force required to pull the panel over was equivalent to a wind velocity of 264 miles per hour, the full pressure of which was directly against the wall. Calculated in the same way, the Cheney Flashing would withstand a wind velocity of 1490 miles per hour under a six inch coping stone.

These figures are conservative. Bear in mind this panel was only 42 inches long and lacked the stiffening of adjacent sections of the wall and of cross walls at the ends.

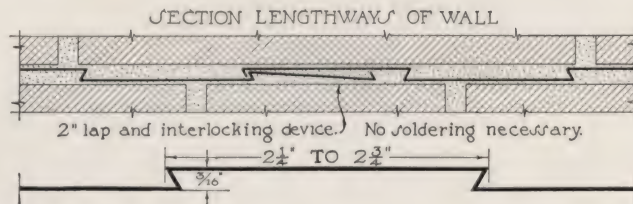


Drainage Test



Photo shows brick test panel of standard construction with Cheney Flashing installed and bottomless pan on top.

Water, equivalent to cloud burst precipitation, about 24 in. per hour, was poured into pan. In 37 seconds the water flowed off of wall over flashing, from each lower key, the length of panel, proving that Cheney Flashing automatically provides its own weep-holes.



Cheney Flashing Specification

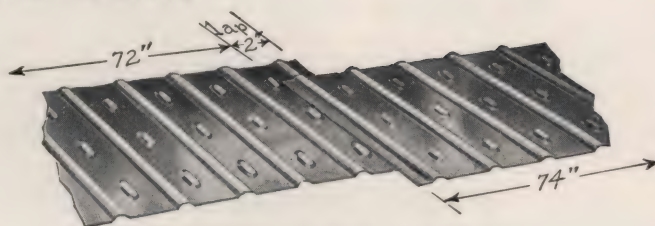
All counterflashing, thru-wall flashing, and flashing carried through masonry walls shall be Cheney Flashing and shall be placed in the wall with mortar below and on top so that a mechanical bond is obtained in every direction within the mortar bed. Flashing shall be installed in accordance with the standard specifications of THE CHENEY COMPANY, Winchester, Massachusetts.

Endorsed by Roofing Manufacturers

Cheney Flashing is endorsed and recommended by most manufacturers of built-up roofing materials and in most cases they will furnish surety bond guarantees on their roofs and built-up base flashings if Cheney Flashing is used.

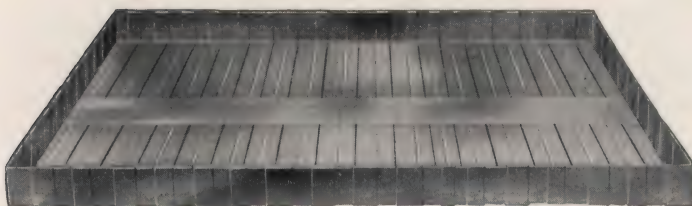
REVERE THRU-WALL FLASHING

A low priced thru-wall flashing made of 16 oz. copper that bonds in all lateral directions. Interlocks without soldering, provides for expansion and contraction and comes in flat sheets ready for the sheet metal contractor to form to meet conditions of job.



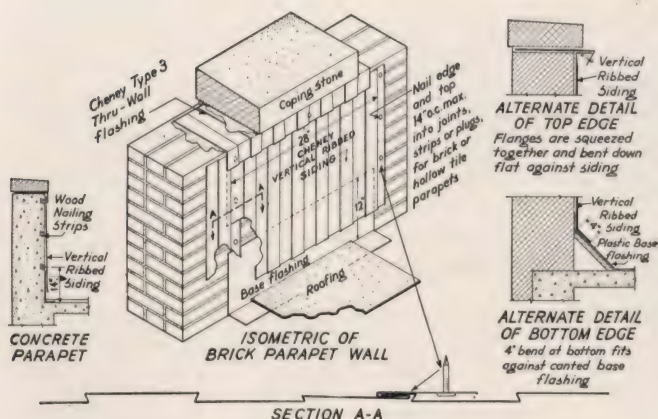
Sections Showing Method of Interlocking

CHENEY SHOWER PANS



Made of Cheney Flashing and strongly constructed of 16 oz. copper with reinforced locked and sweated corners. Keys absorb expansion and contraction strains and form a perfect bond with the mortar. Made at the factory to exact detail and shipped ready to install. Far superior and less expensive than the usual 6 lb. lead pan which corrodes so quickly and punctures so easily.

CHENEY VERTICAL RIBBED SIDING



Very attractive in appearance and provided with a watertight expansion joint. Extremely rigid, quickly installed and usually requires about one-tenth the labor

necessary to install standing seam copper. Made of 16 oz. copper. Used for lining inside of high parapets, on side walls of monitors and penthouses, etc.

SPANDO WATERPROOFING AND COPPERKOTE

Spando Waterproofing



A strong, tough, durable, copper-surfaced waterproofing, far superior and much more permanent than ordinary membrane. Embossed on the copper side with bumps about $\frac{1}{8}$ in. high and spaced on 4-in. centers to prevent slippage on the masonry. Has the flexibility of membrane and the permanency of copper, and is laid quickly and formed to shape by hand as the masonry progresses.

CopperKote



A very inexpensive copper waterproofing similar to Spando. Made in two weights, 1 oz. and 2 oz. 1-oz. CopperKote consists of a continuous layer of 1 oz. copper, one layer of asphalt, and one layer of 45-lb. Brownskin membrane entirely impregnated with asphalt. 2-oz. CopperKote consists of a continuous layer of 2-oz. copper, two layers of asphalt, and a two-ply membrane consisting of two sheets of 45-lb. Brownskin membrane entirely impregnated with asphalt.

REVERE COPPER AND BRASS INCORPORATED

EXECUTIVE OFFICES AND GENERAL SALES DEPARTMENT

230 Park Avenue, NEW YORK, N. Y.

For Division Offices, Mills and District Sales Offices, see our catalogue on Sheet Copper and Leadtex

REVERE THRU-WALL FLASHING

A Reasonably Priced Flashing for All Wall Conditions

Materials and Identification

The flashing is made of Revere 16 ounce soft copper or Revere Leadtex, lead-coated copper. Both products are noted for their durability and workability. Each flashing is stamped "Revere Flashing Pat. No. 1,928,589."

Design and Structural Advantages

The design of the Revere Flashing is such that water will weep out of the wall and lateral movement of the wall in all directions is prevented, due to the unusual mechanical bond between mortar and flashing. A water-tight interlocking joint is made between the flashing sheets without the use of solder to form a continuous flashing and to take care of expansion and contraction. This over-lap is 2 in., which meets Government specifications.

In the design of the flashing there are raised ribs $\frac{1}{8}$ in. high, spaced 3 in. apart. These are rolled into the sheet rather than stamped. The ribs run all the way across the flashing. This provides a distinct advantage because when the flashing sheet is bent to form a 4-in. counterflashing face, it is much stiffer than plain copper which tends to be wavy when it has been bent up and down. There is also a series of embossings, $\frac{1}{8}$ in. high and approximately $\frac{1}{2}$ in. wide and 1 in. long, which prevent "in and out" movement.

Sizes

Revere Flashing is furnished only in sheet form in widths of 8, 10, 12, 14, 16, 18, 20, 22, 24, 30 and 36 in. and overall length of 74 in., which when laid up with the lap, measures 72 in. The above sizes will meet practically every flashing need. The length of Revere Flashing is such that it is easily handled. Where for any reason, other widths than those listed above are required, they can be cut to the desired size by the sheet

metal contractor. Revere Flashing is packed in containers of twenty-five pieces, or enough to cover 150 lineal feet of wall.

Adaptability

One of the principal advantages of Revere Flashing is its adaptability. All styles and sizes of Flashing can be cut, bent and formed from this sheet by the sheet metal contractor.

Price

Revere Flashing is very reasonably priced. Due to its interlocking feature which makes a water-tight joint without the use of solder, it can be installed for less than plain sheet metal flashing with soldered joints.

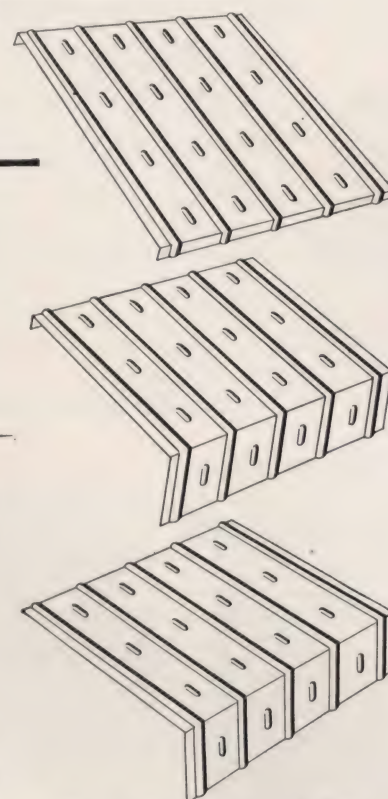
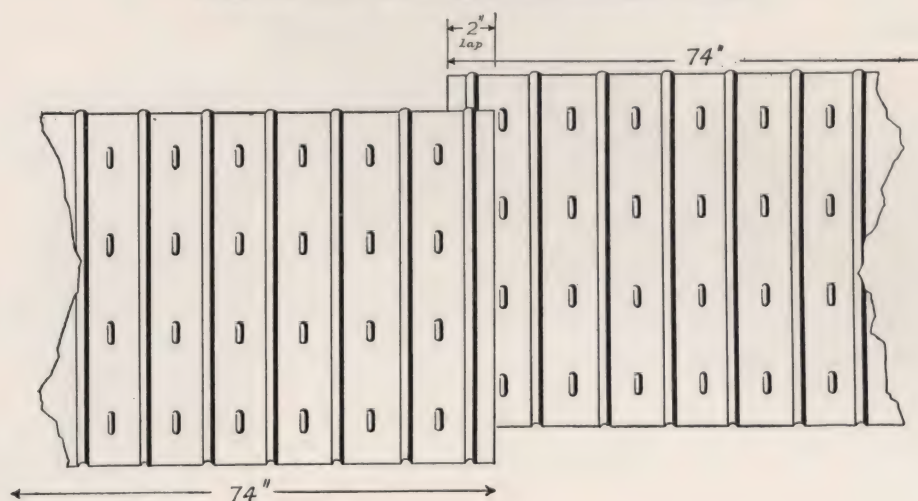
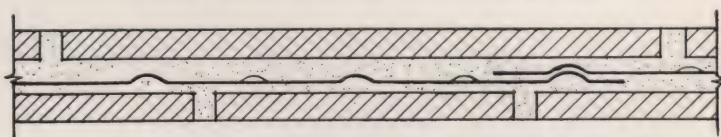
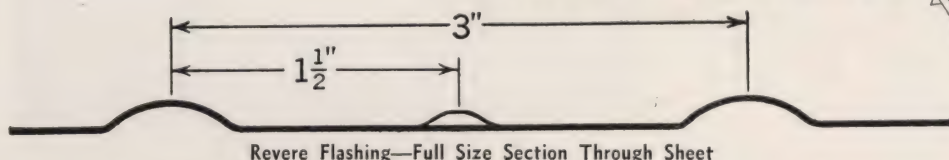
Availability

Revere Flashing is readily available in every section of the United States through Revere Sheet Metal Distributors. This, plus the fact that all types of flashing can be cut and bent by the sheet metal contractor from Revere Flashing, practically eliminates special orders, delays in shipment and other costly delays.

Specification

Thru-wall flashing shall be provided below the parapet coping, for counterflashing in masonry parapets and where low roofs abut the superstructure and elsewhere as indicated on drawings. That portion in the wall shall be bonded horizontally at intervals of not more than 3 in. by a series of ribs and raised projections $\frac{1}{8}$ in. high, with ribs extending the full width of the wall. End joints shall be interlocking and over-lapping at least 2 in. so that a water-tight joint is made without soldering. The flashing shall be Revere Flashing (Revere Copper and Brass Incorporated) and shall be formed so as not to cause any accumulation of water on the horizontal surfaces and the transverse bonding ribs shall not be drawn or stretched.

ONE TYPE COVERS ALL CONDITIONS



Any of the usual types of flashing can be bent and formed by the sheet metal contractor from Revere flashing furnished in sheet form

THRUBOND FLASHING CORPORATION

Manufacturers of Thru-Bond Corrugated Expansion Wall Flashing

(Patented)

TELEPHONE

MOtt Haven 9-3266

525 East 136th Street, New York, N. Y.

THRUBOND CORRUGATED EXPANSION WALL FLASHING

Description

Thru-Bond Corrugated Expansion Wall Flashing is a metal wall flashing formed with alternating corrugated and flat surfaces. It provides at once the maximum security from seepage and leakage through walls and the maximum bonding value with minimum cost of labor in setting.

Advantages of Thru-Bond

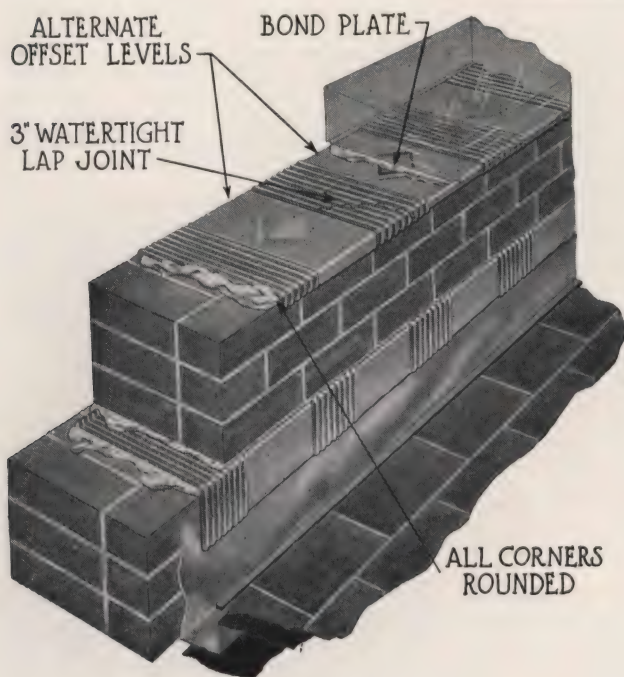
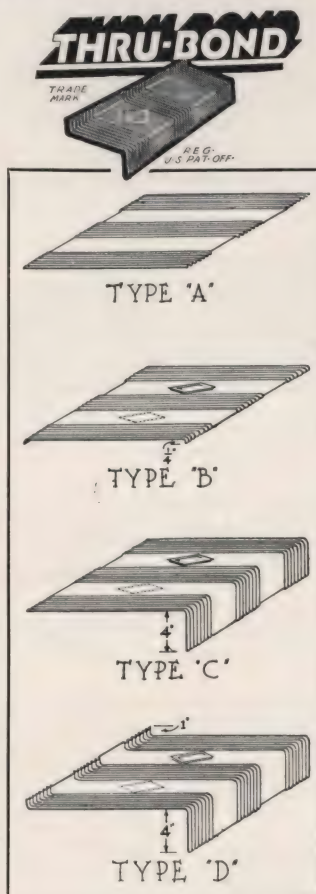
Corrugations—The corrugations in *Thru-Bond* are formed in 3-in. widths in machined rollers, thereby retaining the full strength and thickness of the metal.

The corrugations have a six-fold purpose in providing *full expansion, perfect interlock, continuous water channels, rigidity, solid bond* and *pleasing appearance*.

Expansion—The corrugations allow full expansion and contraction to follow any and all structural movements within the wall from whatever cause. Such expansion of the flashing is of particular importance at the lap seams and it is *precisely at these seams that Thru-Bond is particularly resilient*.

Interlocking Laps—Joints formed by overlapping corrugations to their full width of 3-in. provide watertight laps without soldering.

Continuous Water Channel—The corrugations of *Thru-Bond* provide continuous channels by which water readily escapes to the outside of walls.



Rigidity—The corrugations add rigidity and strength to *Thru-Bond*, enabling it to withstand the abuse to which all flashings are subjected, especially where flashing acts as a counter-flashing.

Solid Bond—Solid bond is secured by means of the corrugated sections, spaced 6-in. on centers and by locating the alternating plain sections on different levels. In addition, where the flashing is to be used in parapet walls, bond plates are provided on all plain sections, alternating top and bottom.

Appearance—*Thru-Bond* presents a neat appearance where exposed. Its regular division into corrugated and plain sections provides neatness and pleasing appearance.

Rounded Bends—All horizontal bends in *Thru-Bond* are perfectly rounded by special machinery. This avoids flattening of the corrugations, allowing full drainage and expansion.

Materials

Thru-Bond Flashing can be had in any desired metal, including copper, zinc, hard lead, lead-coated copper, galvanized iron, etc.

Types

Thru-Bond Flashing is made in four standard types briefly described as follows:

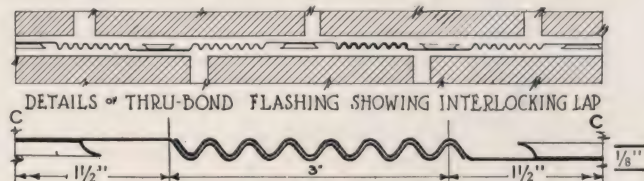
Type "A"—For use below roof line, over cornices and lintels, under sills and for spandrel flashing. This type can be bent to any angle.

Type "B"—For use under copings, furnished with mortar bond plates on all flat surfaces, top and bottom.

Type "C"—For use in parapet walls as a through counter-flashing.

Type "D"—For use with 1-in. turn-up on inside, for all walls except parapets.

Special Types—Special shapes required to meet conditions of any particular job are turned out at the factory and shipped to the job ready for installation. No forming or other field work is necessary.



Specifications — Short Form

Insert under Sheet Metal Work:

"All wall and counter-flashing shall be Thru-Bond Corrugated Flashing as manufactured by the THRUBOND FLASHING CORPORATION, 525 East 136th Street, New York, N. Y., and installed with mortar above and below the flashing, all as shown on drawings and in accordance with written instructions of the manufacturer."

Detail specifications gladly furnished on request.

Service

The manufacturers of *Thru-Bond* have full knowledge of flashing conditions and sheet metal problems from their experience as roofing and sheet metal contractors for 25 years, performing work on outstanding buildings throughout the country. This knowledge and experience are at the service of architects and others interested.

WEATHERPROOF FLASHING CO., INC.

NEW BRUNSWICK, N. J.

BRANCH OFFICES

NEW YORK, N. Y., 101 Park Avenue (Room 838)

PHILADELPHIA, PA., 2812 Richmond Street

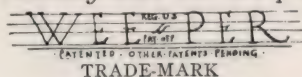
"WEE-PER" THRU-WALL FLASHING

"The Flashing with the Weep-holes"

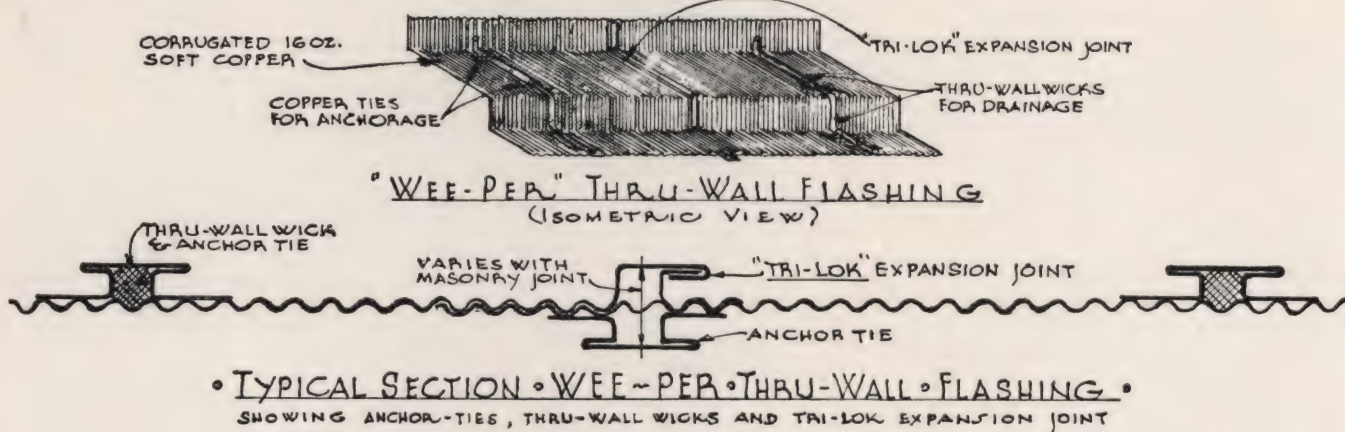
Description

"Wee-per" Thru-Wall Flashings at once afford a practical, economical and scientifically designed means to lock mechanically the mortar bond, and to solve the important problem of masonry seepage and drainage.

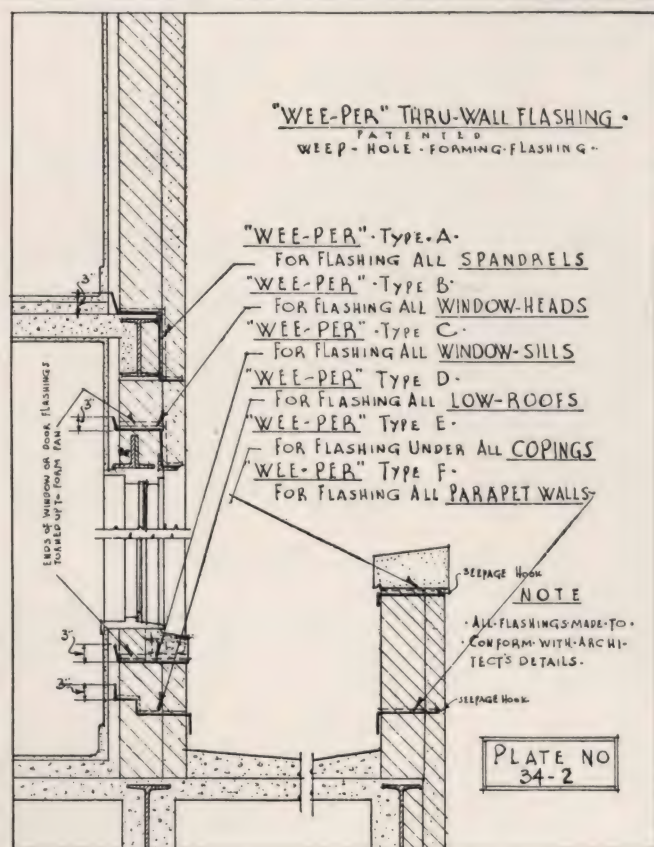
"Wee-per" Thru-Wall Flashings prevent leaks, costly maintenance, disintegration of walls and rusting of steel spandrels and lintels and retard efflorescence.



"Wee-per" Thru-Wall Flashings are made of deep corrugated 16-oz. soft copper to which special woven wicks are secured by anchor ties. The wicks, chemically treated, deteriorate after installation, forming weep-holes in the mortar joint of walls where "Wee-per" Flashings are installed. During the process of deterioration the wicks function by the force of capillary attraction.



WEE-PER THRU-WALL FLASHING



Advantages of "Wee-per" Thru-Wall Flashing

Is Economical—Requires no soldering, special fittings or loss of time. Flashing is built into walls as the masonry progresses. All flashings are pre-formed to architect's details. Window head or sill flashings are manufactured to exact dimensions required by the job, and include turn-up at end. Continuous type of flashings, as for under-coping stones, are manufactured in 7 ft. 6 in. sections, thus reducing by one-half the number of joints and the number of sections to be handled.

Reduces Effects of Expansion and Contraction—The design of "Wee-per" Flashings minimizes the effects of temperature change and settling of walls. The movement of contraction and expansion is localized to the face of each corrugation and not permitted to spread over a large flat area as in many other flashings. The "Tri-Lok" Expansion Joint permits this movement to take place unimpeded.

Affords Superior Mechanical Bond—The design of the anchorage provides a definite, positive and continuously undeformed bond. The pre-formed construction of the anchor ties and the "Tri-Lok" afford an absolute lock transversely across the flashing and in every direction.

Permits Drainage of Walls—The weep-holes provide a means for conducting water, resulting from condensation or seepage, from the inner side of the wall to the exterior.

Provides Circulation of Air—The weep-holes provide conduits for circulation of air, thereby permitting evaporation of such moisture that had not been drained off.

Prevents Seepage—The wide lapping of the corrugated sheets which become nested in installation, together with the undeformed "Tri-Lok" Expansion Joint, form a continuous unbroken course of watertight flashing. This watertight course and the weep-holes are made possible only through the use of "Wee-per" Flashing.

Specifications

All thru-wall flashing shall be 16-oz. copper "Wee-per" Flashing of proper type and shall be made to conform with the architect's details or specifications. Thru-wall flashings must provide weep-hole forming means for positive drainage and anchorage and shall be "Wee-per" Thru-Wall Flashings with "Tri-Lok" Expansion Joints as manufactured by the WEATHERPROOF FLASHING CO., INC., New Brunswick, N. J.

HETZEL ROOFING PRODUCTS CO.

Manufacturers of Roofing Cements and Paints

67 Maine Street, NEWARK, N. J.

CABLE ADDRESS
"Hetzel, Newark"

Products

HETZEL'S ELASTIC ROOF CEMENT (oil base) for all roofs, glass skylights, coping stones, etc.

HETZEL'S ACOUSTICAL CEMENT, "ACOUSTIGLU."

HETZEL'S PLASTIC ROOF COMPOUND and FIBROUS KOTING, (ASPHALT BASE).

HETZEL'S ELASTIC GLAZING and CALKING COMPOUND.

HETZEL'S PIPE JOINT COMPOUND.

HETZEL'S DAMP RESISTING PAINT.

Also Hetzel's Asphalt Paints; Hetzel's "Rub-on" Roofing Paint; Hetzel's Enamel Paint for boiler fronts and steam pipes; Hetzel's Acidproof Paint for metal work, ammonia tanks and gas tanks; Hetzel's Structural Paint for exposed surfaces.



TRADE-MARK

Hetzel's Elastic Roof Cement

Hetzel's elastic roof cement, in use throughout the United States and Europe for many years, is especially valuable for covering and repairing all holes, cracked joints, breaks, or leaks in roofs of all kinds. Used also for pointing around chimneys, skylights, and dormer windows; for repairing coping stones, gutters, wood and stone work which require to be made watertight; for laying and bedding slate and tile roofs.

Asphalt shingles laid in Hetzel's cement will not curl, nor can snow or rain blow under them.

Colors: brown, gray, black, white, green and red. It is also made to order to suit every purpose, and is the original slaters', tanners' and tile roofers' cement.

Hetzel's elastic roof cement is equally well adapted for use on slate, tin, asbestos, glass, wood and metal roofs; is permanent; does not run or loosen from joints or cracks, and is not affected by any extreme of temperature or climatic changes. It does not harden, but preserves its complete elasticity even when exposed to extreme heat, cold, dryness or humidity.

Specifications—All nailholes and joints between the slates shall be sealed with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J., in such quantities as to hold the slates in position should they break, or the nails rust away. (Fig. 1.)

The joints of all tiles shall be sealed with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J. To prevent leaking, the hip and ridge rolls shall be sealed in a like manner. (Fig. 2.)

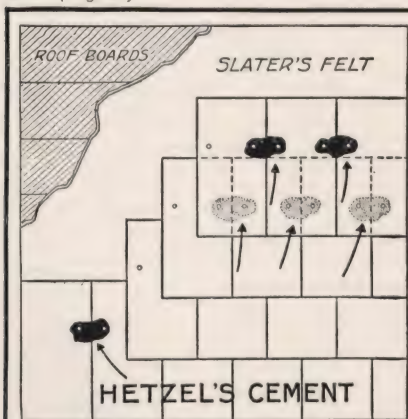


Fig. 1. For Slate Roofs

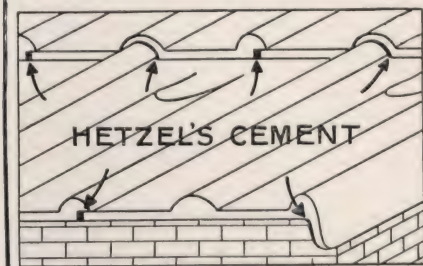


Fig. 2. For Spanish and Flat Tile Roofs

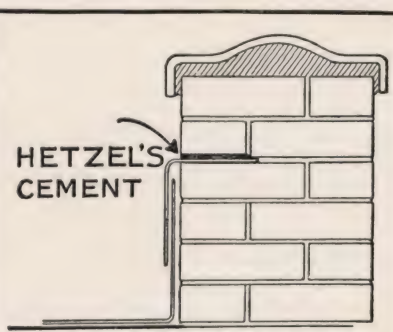


Fig. 3. For Pointing Up Cap Flashings

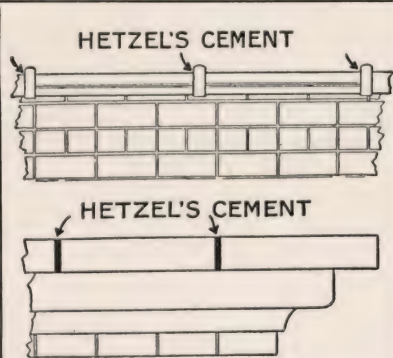


Fig. 4. For Tile and Stone Copings

APPLICATIONS OF HETZEL'S ELASTIC ROOF CEMENT

All cap flashings shall be carefully pointed up with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J. (Fig. 3.)

The joints of all copings shall be set and sealed with Hetzel's Elastic Roof Cement as manufactured by the HETZEL ROOFING PRODUCTS CO., Newark, N. J. (Fig. 4.)

Hetzel's Acoustical and Insulation Cement, "Acoustiglu"

For applying acoustical and insulating materials to ceilings, floors, walls, oil and gas tanks, etc. It will stick fast to any surface—plaster, glass, gypsum, brick, concrete, stone, metal or wood.

"Acoustiglu" cement is compounded from ingredients which render it proof against alkali, gas, benzene, oil, naphtha and acid fumes and, once it sets, the insulation cannot become loosened. It retains its elasticity indefinitely and is not affected by climatic conditions. Being impervious to moisture it not only acts as a damp resistant factor, but also protects the underside of the material.

Packed in 5, 10, 25 and 65-lb. pails, 100-lb. iron drums and 600-lb. wood barrels. Color ordinarily is red but other colors may be supplied at additional cost.

Method of Application—To obtain the best result the surface should be clean, dry and free from grease or oil.

For Acoustic Tile—Apply a daub of "Acoustiglu" about 3 ins. in diameter and in thickness tapering to about 1/2 in., near each corner of tile; then place tile about 1 in. from its permanent position and slide in place with a firm pressure. Unevenness can be built up with "Acoustiglu." 50 lbs. will take care of about 100 sq. ft. of 12x12-in. tile.

For Insulation Board—Apply a strip of "Acoustiglu" about 1/2 in. thick by 1 1/2 ins. wide along edges and across the sheet every 12 ins.; then slide sheet firmly in place hammering it down with mallet. 60 to 70 lbs. will take care of 100 sq. ft. based on strips, about 12 ins. apart.

For Dampproofing—Where acting as a damp resistant factor, apply "Acoustiglu" on entire surface of insulation about 1/4 in. thick; then slide sheet firmly in place and hammer down with mallet. 100 to 125 lbs. will take care of 100 sq. ft.

Hetzel's Plastic Roof Compound and Fibrous Koting (Liquid)

A specially prepared roofing cement made on an asphalt and asbestos base for repairing and painting old wood, tin, iron or felt roofing; for repairing leaky chimneys; for waterproofing below and above grade, etc. The compound is in paste form and the Koting in liquid form. Colors: red, black and green.

Hetzel's Elastic Glazing and Calking Compound

For pointing window frames, hothouses, steel sashes, crevices, cracks in masonry, etc. Remains elastic indefinitely. Will not crack or dry up. Far superior to lead or oakum. Does not contain asphalt or coal tar. Can be painted over with any color. Also made in special consistency for use in guns.

Colors: white, gray, green, black, red and buff.

Pipe Joint Compound (Red, Gray and White)

For joints of gas, steam, water, and air pipes. Will not harden, and prevents joints from rusting. Makes absolutely tight joints which can be disconnected at any time without injury to fittings.

Hetzel's Damp Resisting Paint

A compound black paint for dampproofing foundations and walls above and below grade. When applied to inner side of exterior walls, forms a good dampproof surface for direct application of plaster, rendering plaster stain-proof, and saving cost of furring and lathing.

MEMORANDA

ROOFING 8

- SECTION -

CATALOGS 55 to 65

**WOOD CONSTRUCTION—
INCLUDING SHINGLES
AND ACCESSORIES**

SAMUEL CABOT, INC.

Stained Shingles

141 Milk Street, BOSTON, MASS.

BRANCH OFFICES

NEW YORK, N. Y., 101 Park Avenue

PHILADELPHIA, PA., Real Estate Trust Building

CHICAGO, ILL., 5000 Bloomingdale Avenue

AGENTS AND DISTRIBUTORS IN PRINCIPAL CITIES

Products

CABOT'S STAINED SHINGLES.

For Heat-insulating and Sound-deadening "Quilt," and for Stains, Collopakes (for every paint use), Waterproofing, and Wood Preservatives, see File Index.

Cabot's Creosote Stained Shingles

Description—Grade A, U. S. Dept. of Commerce Standard, 100% edge grained red cedar shingles ready-stained with Cabot's Creosote Shingle and Wood Stains.

Sold in original bundles, as packed at the mill, guaranteed full count.

Preserved with genuine creosote, the best wood preservative known, and have a life at least twice as long as unstained shingles or shingles stained with non-preservative stains.

Standard Colors—Weathering Browns and Grays, Light and Dark Bungalow Browns, Bark Browns, Warm Brown; Light and Dark Tile Red, Maroons, etc.—A complete range of these handsome and durable colors for roof and walls.

Light, Dark and Medium Moss Greens—Our moss greens have a richness and depth of color such as can only be produced by the strongest and purest pigments.

Grays—Our Weathering Gray Shingles give the true natural seashore gray tones.

White Shingles—Cabot's Shingles are also furnished ready-stained with our No. 1166 White Primer, to be finished after the shingles are laid, either with (1) a brush coat of No. 1166, (2) one or two brush coats of Cabot's Old Virginia White or (3) one

Cabot's STAINED Shingles

Samuel Cabot
Inc.

or two coats of Cabot's DOUBLE-WHITE.

See our pages on Collopakes (for every paint use) for descriptions of these materials.

Blended Roofs—All color combinations are blended in the bundle so they can be laid without blending on the job.

24-in. Re-sawn, Hand-split Shakes—

With flat backs; butts $\frac{3}{4}$ in. to $1\frac{1}{4}$ in. thick.

These heavy and artistic shakes are rapidly gaining in popularity. They produce an effect as beautiful as tile or heavy slate and are, of course, much warmer than either, keeping out the summer's sun and the winter's cold.

Specification Note: When Cabot's Creosote Stained Shakes are laid where snow must be considered, or where the pitch of the roof is less than $\frac{1}{2}$, 30-lb. waterproof roofing paper should be applied over the roof sheathing before shingling, in 18-in. horizontal widths, with 2-in. head cap. (For greater insulation, substitute Cabot's Waterproof Quilt, Double-ply, for the paper.)

Cabot's Heavy-Bodied Stained Shingles

(Stained with Cabot's Heavy Bodied Shingle Stains—non-creosote.)

Cabot's Heavy-Bodied Stained Shingles are made

with a new process heavy-bodied color treatment, each shingle being individually brushed to give smooth, uniform, solid-color effects.

Cabot's Heavy-Bodied Shingle Stains, with which these shingles are stained, are new heavy-bodied, colloidally processed, non-creosote stains of great hiding power, covering capacity and long color life.

These new stained shingles are known as the "3600 Series" and bear color numbers between 3600 and 3700.

Samples

Samples of standard colors sent on request.



Residence in Beverly Hills, Calif.

ROLLIN PIERSON, Architect

Walls, Cabot's Creosote Stained Hand Rived Cedar Shakes, roof stained with Cabot's Creosote Shingle and Wood Stains

COVERING CAPACITY PER SQUARE OF CABOT'S STAINED SHINGLES BASED ON THE FOLLOWING WEATHER EXPOSURE

	4-in. exp.	4½-in. exp.	5-in. exp.	5½-in. exp.	6-in. exp.	6½-in. exp.	7-in. exp.	7½-in. exp.	8-in. exp.	8½-in. exp.	9-in. exp.	9½-in. exp.	10-in. exp.	11-in. exp.	12-in. exp.
XXXX 1 square of 16 in. (4 bun. 20/20 pack.)	80	90	100	110	120	130	140	150	.....	.....	.....	.....	.....	.....	.....
"Perfections" 1 square of 18 in. (4 bun. 18/18 pack.)	.....	.....	.....	100	109	120	129	138	148	157	.....	.....	.....	.....	.....
"Royals" 1 square of 24 in. (3 bun. 14/14 pack.)	.....	.....	.....	.....	.....	.....	.....	75	80	85	90	95	100	110	120

JOHN C. RUNKLE, President

THE ELHIDE COMPANY

Makers of Elhide Hand-Split Cedar Shingles

130 Sixth Street, CAMBRIDGE, MASS.

TELEPHONE: Kirkland 5100

PLANTS: HATZIC, B. C.; CAMBRIDGE, MASS.

Products

ELHIDE HAND-SPLIT CEDAR SHINGLES.
Also Elhide Monson Maine Roofing Slate.
For Elhide Woven Fencing—Rustic or Hand-Split,
see File Index.



Elhide Hand-Split Cedar Shingles

These shingles are rived by hand from the giant red cedars of British Columbia, a wood famous for its non-rotting qualities. After the shakes are split by hand, each one is sawn diagonally, under our patent, into two tapered shingles, which leaves the upper or exposed surface of each shingle in its natural beauty, a rugged hand-split textured shingle, while the under-side is sawn smooth to make a level laying surface.

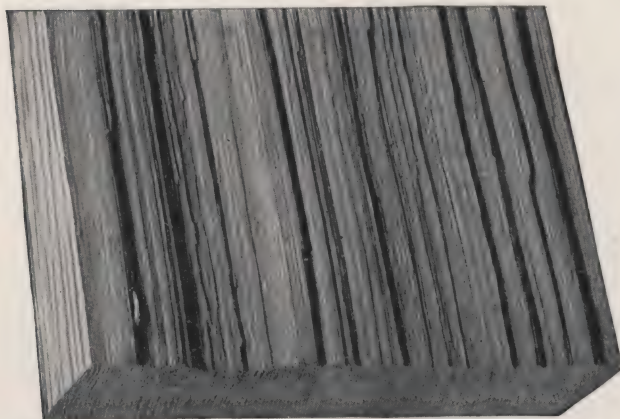
Elhide Shingles are 100% edge-grain and air dried, or equivalent. The former prevents warping, curling and splitting, while the latter retains the natural oils in the wood so essential to the long life of the shingle, and so often dissipated by excessive artificial drying.

These shingles need no staining to preserve them, and when laid unstained, weather to soft and very pleasing tones. If staining is desired, we are prepared to furnish them in white or any color. Elhide Hand-Split Cedar Shingles are made in random widths, 5 to 12 in., and in the following lengths and butt thicknesses: $\frac{1}{2}$ -in. butts, 26 in. long— $\frac{3}{4}$, 1 and mixed



Cottage in Darien, Conn.

DAVIS & WALLDORFF, Architects, New Haven, Conn.



Note the Beautiful Texture of This Surface Which Varies in Each Individual Shingle



Graduated Roof of Elhide Hand-Split Cedar Shingles on a Residence, Wellesley, Mass.

WALKER, WALKER & KINGSBURY, Architects, Boston, Mass.

butts $\frac{5}{8}$ to $1\frac{1}{4}$ in.—26 and 32 in. long. $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2-in. butts, 32 in. long. Also made to order in any butt thickness and length desired. $\frac{3}{4}$ -in. butts and heavier give the most satisfactory results.

Elhide Graduated Roofs

Heretofore, when laying out a graduated roof, the only available material has been slate slabs. THE ELHIDE COMPANY has now produced for this purpose massive hand-split cedar shingles up to 2 in. in thickness. With these shingles, the architect can design a graduated roof of unsurpassed massiveness and strength, and yet retain all the beauty and characteristic charm of the wooden shingle enhanced by the ruggedness and texture of the hand-split surface.

For example, a roof may be laid with 2-in. butt shingles at a 12-in. exposure at the eaves, gradually reducing both the thickness of the butts and the exposure to the weather to $\frac{1}{2}$ -in. butts and a 6-in. exposure at the ridge.

Upon presentation of roof plans and elevations, we shall be pleased to furnish, without charge, definite layouts for graduated roofs.

Elhide Hand-Split Cedar Shingles retain all the well-known desirable qualities that are inherent in the wooden shingle, and in addition provide a beautiful rugged, textured surface, and a durability, and freedom from upkeep expense obtainable only in a shingle rived by hand, entirely edge-grain and free from excessive artificial drying.

Full information, specifications and pictures of installations furnished upon request.

A Few Installations

OWNER

George Roberts, East Hampton, N. Y.
N. E. States Exhibition, Springfield, Mass.
P. A. Clark, Kingston, N. Y.
John Hay Whitney, Manhasset, N. Y.
Mrs. William White, Haverford, Pa.
Dr. Philip G. Cole, Tarrytown, N. Y.
H. P. Metcalf, Exeter, R. I.
Samuel Halsey, Sunapee Depot, N. H.
Mrs. Prescott Slade, Mill Neck, N. Y.
Morris Brill, Mt. Kisco, N. Y.
Mrs. J. P. Kellogg, Rumson, N. J.
E. P. Swenson, Upper Saranac, N. Y.
J. Wilton Peters, New Canaan, Conn.

ARCHITECT

Aymar Embury II
Joseph Everett Chandler
Edgar Salomonsky
LaFarge, Warren & Clark
Willing, Sims & Talbutt
LaFarge, Clark & Creighton
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Chester A. Patterson
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Polhemus & Coffin
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Henry Otis Chapman

JAMES LUMBER COMPANY

ESTABLISHED 1875

Makers of "Blue Jay" Hand Split Cypress Shingles

88 Broad Street, BOSTON, MASS.

THE ARCHITECTURAL APPEAL OF "BLUE JAY" SHINGLES

Much of the attractiveness possessed by many buildings of Colonial times was due to the use of hand split shingles on both sidewalls and roofs.

To architects who are desirous of reproducing the same qualities of texture and long life in



their buildings, attention is called to "Blue Jay" Hand Split Heartwood Cypress Shingles.

No single generation lives long enough to renew a roof covered with genuine hand split and shaved cypress shingles.

HOW "BLUE JAY" SHINGLES DIFFER FROM SAWED SHINGLES

"Blue Jay" Shingles differ from the commercial sawed shingles in three different ways: Thickness and method of tapering, surface texture, and method of producing.

Thickness and Method of Tapering—"Blue Jay" Shingles are practically the same thickness half their length before they are tapered by shaving with a draw knife, whereas the sawed shingles have a uniform taper from butt to tip. The extra thickness prevents curl and provides extra depth for wear.

Surface Texture—The method of hand splitting with the grain gives an individual texture to each shingle and no two are alike. This gives interest and texture to the wall or roof which is impossible to produce otherwise. The flat grain preserves all the wonderful weather-resisting qualities of heartwood cypress.

Method of Producing—The same hand methods which the pioneers in South Carolina followed in making shingles as far back as 1640 are followed in producing "Blue Jay" Shingles. Today descendants of the slaves who produced the early shingles are working in the same southern swamps, felling selected trees, cutting bolts and with frow, maul and draw-shave are making "Blue-Jay" Shingles.

Splitting and Tapering—After splitting to the proper butt thickness, the upper half of the shingle is tapered to $\frac{1}{8}$ in. thick producing a shingle very different from the sawed shingle.

Weathering and Coloring—They are then piled loosely and left to season and to weather in the sun and air. "Blue Jays" when delivered are already semi-weathered. They weather to a silver gray. They never require staining for appearance or preservative purposes, but may be whitened or colored with any paint or standard shingle stain.

Sizes—All "Blue Jay" Shingles are carefully selected, graded and fully guaranteed. They are made in the two sizes most favored in Colonial days:

24 in., with $\frac{5}{8}$ in. butts and $\frac{1}{8}$ in. tops.

20 in., with $\frac{1}{2}$ in. butts and $\frac{1}{8}$ in. tops.

Samples gladly supplied on request.

Laying—For roofing, the 24-in. size should be laid 7 in. to the weather, and the 20-in. size 6 in. to the weather. For sidewalls, the 24-in. shingles may be placed 9 or even 10 in. to the weather. The 20-in. size should be laid 7 or 8 in. to the weather.

Nailing—Specify copper ($1\frac{1}{4}$ to $2\frac{1}{4}$ in. in length), "yellow metal" or old-fashioned dipped galvanized nails, 5d or 6d according to exposure. The less the amount of shingle exposed to the weather the longer the nail should be. On sidewalls, 4d nails may be used. Prices on nails will be quoted if desired.

Staining—"Blue Jay" Shingles never have that "new," "raw"

look and never actually require staining for appearance or preservative purposes, but they may be whitened or colored with paint or any standard stain.

Prices—Gladly supplied on request. You will be surprised and pleased to learn how modest they are. Please give us the following data:

The size—that is, 20 in. and/or 24 in.

The area in square feet to be covered.

The place of delivery.

The approximate date of delivery wanted.

Shipments—Made from Boston stock or from our camps direct, as best suited to the particular order. Ample supplies always on hand.

Specifying—To obtain the genuine article, specify as follows: "For roof and sidewalls use genuine cypress, clear all heart, hand made, split and shaved shingles, 'Blue Jay Brand,' supplied by JAMES LUMBER COMPANY, 88 Broad Street, Boston, Mass."

Sawed Cypress Shingles—We sell them also.



Built about 1740

"Reed House" Kingston, Mass.
24-in. "Blue Jays" at 10-in. exposure

Reconditioned 1929

MANUFACTURERS RESERVE SUPPLY, INC.

TELEPHONE
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72-96 Woolsey Street, IRVINGTON, N. J.

SOLE EASTERN REPRESENTATIVES FOR

"TAPER-TIPT" RED CEDAR HAND-SPLIT SHINGLES

MANUFACTURED BY ROBERT McNAIR SHINGLE CO., LTD., Patentee, VANCOUVER, B. C.

"TAPER-TIPT" RED CEDAR HAND-SPLIT SHINGLES

For Use Wherever Shingles with Distinctive Textures Are Desired on Sidewalls and Roofs

McNair "Taper-Tipt" Hand-Split Red Cedar Shingles or Shakes have met with the enthusiastic approval of architects throughout the country when they desire shingles of distinctive character. The hand-split exposed surface of the shingles is the true hand-split effect characteristic of the

Robert McNair
—Red Cedar—
Shingles

shingles used on so many of the old houses of Colonial times. Made from 100% edge grain British Columbia Red Cedar, they assure unusual durability and permanence on account of the well-known weather-resisting qualities and the resistance of this wood to decay.

HOW THEY DIFFER FROM OTHER HAND-SPLIT SHINGLES

In "Taper-Tipt" Hand-Split Red Cedar Shingles is all the mellow beauty of this old exterior building material, plus the "Taper-Tipt" feature—*smooth-sawn on the under side and at the tip*. This method of making our shakes permits them to

lie flat and tight against the sheathing. Overlapping shingles fit snugly one against another, permitting ease in laying, better appearance and greater insulation, without sacrifice of the natural rough-hewn beauty of shakes.

OTHER IMPORTANT "TAPER-TIPT" FEATURES

Color and Weathering—These shingles weather naturally to a beautiful silver gray with a soft sheen or gloss as the light strikes the various angles of the split surfaces. They may be stained on the job (or at the factory) white or any color.

Insulation—"Taper-Tipt" Hand-Split Shingles give 10% to 48% greater insulation than many other exterior building materials, thereby substantially reducing heating costs.

Durability and Guarantee—There are shake roofs of this cedar installed over 200 years and still giving satisfactory service. A written guarantee for 20 years (*shown below at the right*) is given with "Taper-Tipt" Shingles when laid with hot dipped, zinc coated nails, or yellow metal copper nails, 1 1/4 to 2 1/4 in. long, depending on the thickness of the shingles used.

Economy—"Taper-Tipt" roofs require no maintenance or replacement for at least 20 years. The beautiful silver gray weathered appearance eliminates future expenses for paint or staining materials and the labor involved.

Pleasing When Used with Other Materials—

"Taper-Tipt" Shingles on roofs blend with any type of sidewall construction. They give perfect insulation—homes are warmer in winter and cooler in summer. Because they are

sawn edge-grain, "Taper-Tipt" Shingles will not warp, cup or curl, but lie tight and flat to the sheathing always, leaving no lodgment for sparks or firebrands. They are more resistant to exterior ignition than many so-called fireproof roofing materials.

Cost—"Taper-Tipt" Hand-Split Shingles are patented and cannot be duplicated. The cost, however, is no more than any ordinary hand-split shingle.

Sizes

Thicknesses—For convenience, "Taper-Tipt" Hand-Split Shingles are packed in various thicknesses—3/8 to 5/8-in. butts, 1/2 to 3/4-in. butts, and 3/4 to 1 1/4-in. butts. They can also be sorted and each thickness packed separately on request. Further thicknesses for any desired specification.

Widths—Random widths from 5 to 18 ins. Also packed in specified widths such as 5, 6, 7, 8 ins., etc.

Lengths—25, 31 and 37 ins. optional. Also special lengths.

Exposures—

Roof

8 in. for 25 in. Shake
10 in. for 31 in. Shake
12 in. for 37 in. Shake

Sidewalls

12 in. for 25 in. Shake
15 in. for 31 in. Shake
18 in. for 37 in. Shake

When Specifying—Specify "ROBERT McNAIR 'TAPER-TIPT' HAND-SPLIT SHINGLES" when writing specifications.



- (1) Exposed Side Rough Hand-Split
- (2) Smooth Tapered Tip
- (3) Back Flat Sawn
- (4) Random Widths—5 to 18 in.
- (5) Extra Long—25, 31, 37 in.
- (6) Thickness at Butt—1/2 to 1 1/4 in.



"Taper-Tipt" Guarantee

"Taper-Tipt" Shingle Roofs are guaranteed to give adequate protection for 20 years. This is a remarkable guarantee but we know from nearly a half century experience that the average period of service rendered by our hand-split shingles is 40 years or more.

A Sample of "Taper-Tipt" Shingles Gladly Furnished on Request

RED CEDAR SHINGLE BUREAU

Western Red Cedar Shingles
4408 White Building, SEATTLE, WASH.

FOR ROOFS AND SIDEWALLS

Protection—When specifying Red Cedar Shingles, insist that the Certigrade Label appear on each bundle. This is your assurance that the shingles are guaranteed by the manufacturer, as being inspected and certified by the RED CEDAR SHINGLE BUREAU, Seattle, Washington.

Advantages—Red Cedar Shingles make a beautiful roofing material. Soft color effects, obtained by staining, combined with deep shadow lines produce an inviting home. Red Cedar Shingles have been tested by storm, hail, tornado, hurricane and earthquake. They have proved their long life on the homes of our forebears.

Uses—Western Red Cedar Shingles make a durable and beautiful roof and sidewall covering. They are adaptable for practically all types of homes and for any kind of exterior wall covering. They may be laid in many different patterns to afford variety.

Insulation—Red Cedar Shingles form the finest natural insulation. Correct application gives three laps of wood, forming triple protection from summer heat and winter cold—effecting a decided fuel saving.

Modernizing—Red Cedar Shingles solve the perplexing problem of home modernizing. Most homes are well constructed. By the application of Red Cedar Shingles over the old sidewalls they can be transformed into new homes at but a trifle more than the cost of repainting. The slight additional cost is more than offset by the added insulation value and fuel savings. The home is materially enhanced in value and made more saleable.

Over-roofing—Re-roofing with Red Cedar Shingles over the old roof is practical, economical and efficient. Whether the old roof is of wood shingles or substitutes makes little difference in labor costs. The expense of removing the old roof is saved, there is no litter



Laying Shingles Over Metal Valley Flashing, Which Is Nailed Right Over Old Shingles

or dirt, no damage to lawn or flowers, and the double roof gives double insulation value. Work can be done at any time because of protection of old roof.

Proper Nails—Only copper nails or nails zinc-coated by the hot dipping process should be used. Plain or blue wire nails should never be used with Red Cedar Shingles. They will rust out long before the shingles need replacing.

Sizes and Grades—Red Cedar Shingles are manufactured in three lengths—16 in., 18 in., and 24 in. Each length has three grades—No. 1, 2 and 3. (See table below.)

Service

The Bureau maintains a complete service department. Full particulars on any subject pertaining to the use of Red Cedar Shingles and literature covering modernizing and re-roofing will be mailed free on request. Write RED CEDAR SHINGLE BUREAU, 4408 White Building, Seattle, Washington. Red Cedar Shingles are sold exclusively through retail lumber dealers.

Certigrade Label

Western Red Cedar Shingles, bearing the Certigrade Label of the U. S. Department of Commerce, when used on both roof and sidewalls of the home give an ideal combination of beauty, durability and comfort



East Elevation "House of Adaptability," Sheridan Beach

PUGET MILL Co., Owner

GEORGE WELLINGTON STODDARD, Seattle, Architect

COVERING CAPACITIES IN SQUARE FEET OF THE VARIOUS SIZED SHINGLES—SQUARE PACK

Size of Shingles		No. Bundles per square	Number of inches exposed to the weather															
			4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	10½	11	11½
1 Square of 16 in.—5/2 in. will cover on	Roofs	4	80	90	100	Greater exposure not recommended.												
	Sidewalls	4	.....	.....	.....	110	120	130	140	150	Greater exposure not recommended.							
1 Square of 18 in.—5/2 ¼ in. will cover on	Roofs	4	70	80	90	100	Greater exposure not recommended.											
	Sidewalls	4	.....	.....	.....	.....	110	120	125	135	145	155	Greater exposure not recommended.					
1 square of 24 in.—4/2 in. will cover on	Roofs	4	.....	.....	.....	.....	80	90	95	100	Greater exposure not recommended.							
	Sidewalls	3	.....	.....	.....	.....	60	65	70	75	80	85	90	95	100	105	110	115

WEATHERBEST CORPORATION

Manufacturers of Weatherbest Red Cedar Wood Stained Shingles and
Brush Coat Shingle Stains
NORTH TONAWANDA, N. Y.

WEATHERBEST OLD COLONY HAND
RIVED RED CEDAR SHAKES.

WEATHERBEST HAND SPLIT RESAWN
and MACHINE SHAKES.

WEATHERBEST 100% EDGE GRAIN
RED CEDAR STAINED SHINGLES.



WEATHERBEST THATCHED EFFECT
STAINED SHINGLES.

WEATHERBEST "DOUBL-THIK"
STAINED SHINGLES.

WEATHERBEST ONE COAT SUPER
and STANDARD BRUSH COAT SHINGLE
STAINS.

OLD COLONY HAND RIVED RED CEDAR SHAKES—EXCLUSIVELY WEATHERBEST

Old Colony Shakes Are Hand Rived Both Sides—Weatherbest Old Colony Shakes are split and tapered by hand in much the same manner as those made by our forefathers in the East from pine and white cedar; in the South from cypress, and on the Western Coast from red cedar. Lasting qualities of these old-time hand split shakes are well known.

Hand splitting of Weatherbest Old Colony Red Cedar Shakes results in a very uneven surface and grain is perfectly straight. It gives them an artistic unevenness that imparts an old-time atmosphere to a roof or sidewall. But at the same time, Weatherbest Old Colony Shakes conform with specified measurements in order to meet the more rigid requirements of modern-day architecture. They are available in lengths of 18, 25, 31 and 37 in., the latter allowing a maximum exposure of 18 in. on sidewalls and 12 in. on roofs.

Weatherbest Shakes are stained any color desired or are primed white at the factory under ideal conditions that permit them to be used exactly as received to weather out to a beautiful silver white effect. Additional coats of heavy bodied Weatherbest Colonial White Stain result in a pure white, non-gummy, long wearing surface. Full size samples of shakes stained any color are available.

To depict the quaintness characteristic of early America, we unhesitatingly recommend these genuine Weatherbest Old Colony Hand Rived Shakes for roofs and sidewalls.



Weatherbest Old Colony Shakes 100% Edge Grain

Specifications of Old Colony Shakes—*The 18-in. Length*—Random widths. Thickness at butts is from $\frac{3}{8}$ to $\frac{1}{2}$ in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 8 $\frac{1}{2}$ -in. exposure covers 100 sq. ft. At 5 $\frac{1}{2}$ -in. standard exposure on roof, one square will cover 65 sq. ft.

The 25-in. Length—Random widths. Thickness at butts is from $\frac{3}{8}$ to $\frac{5}{8}$ in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 12-in. exposure covers 100 sq. ft. At 8-in. standard exposure on roof, one square will cover 66 sq. ft.

The 31-in. Length—Random widths. Thickness at butts is from $\frac{3}{4}$ to 1 in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 15-in. exposure covers 100 sq. ft. At 10-in. standard roof exposure, one square covers 68 sq. ft.

The 37-in. Length—Random widths. Thickness at butts is from $\frac{3}{4}$ to 1 $\frac{1}{4}$ in. allowing slight variations over or under in a small proportion. One square laid on sidewalls at standard 18-in. exposure covers 100 sq. ft. At 12-in. standard roof exposure, one square covers 66 sq. ft.

Full information and illustrations covering the use and application of Old Colony Shakes on various types of homes is contained in a book gladly sent on request.

WEATHERBEST 100% EDGE GRAIN RED CEDAR STAINED SHINGLES

Every shingle is perfect from tip to butt. All shingles are entirely free from dampness before treatment. Each shingle is stained separately full length, both sides and brushed. The dipping stain consists of chemically pure color pigments, high grade wood preservatives and pure linseed oil as binder. Three shingle-by-shingle inspections occur during the staining process. Each bundle of Weatherbest Stained Shingles carries the green Weatherbest label—a guarantee of perfect material and durable colors.

Weatherbest Standard Sizes and Colors

16 in. Weatherbest	XXXXX	5 butts to 2 in.
18 in. Weatherbest	Eurekas	5 butts to 2 in.
18 in. Weatherbest	Perfections	5 butts to 2 $\frac{1}{4}$ in.
24 in. Weatherbest	Royals	$\frac{1}{2}$ -in. butts
24 in. Weatherbest	"Doubl-Thiks"	1-in. butts

Weatherbest colors consist of 40 different shades of greens, browns, reds, grays, also white and ivory. Weatherbest Stained Shingles are also furnished in a color combination similar to

weathered straw for Weatherbest thatched effect roofs, and in many variegated and blended color schemes. Special colors are also furnished without extra charge—color samples on request.

Weatherbest One Coat Super Shingle Stains—Color and preserve a larger surface per gallon than ordinary stains; last much longer and do the job with *one coat* and are economical.

Weatherbest Standard Brush Coat Shingle Stains—Are prepared from the time-tested color pigments, penetrating, binding and preserving oils, which give new Weatherbest Stained Shingles their enduring beauty—excellent coverage to assure remarkable preserving qualities.

Weatherbest Colonial White and Ivory—Give a true, non-gloss effect. Two brush coats are required over a factory prime coat for best results—also used to restore old shingles.

There is over a *quarter of a century of research and practical experience* behind the rigorous policy "Not to cheapen materials or process to meet price competition."

WEYERHAEUSER SALES COMPANY

Representing the Weyerhaeuser Affiliated Lumber Mills

First National Bank Building, ST. PAUL, MINN.

ZONE AND DISTRICT OFFICES IN PRINCIPAL CITIES
For Weyerhaeuser 4-Square Lumber, see File Index



Products

EDHAM STAINED SHAKES; EDHAM STAINED SHINGLES for roofs and sidewalls, for remodeling or new construction.

Edham Shingle Stains; Edham Colonial White; Edham Shingle Nails.

Manufacture

Edham Stained Shingles are made only from No. 1 grades of Western Red Cedar natural shingles, because this wood is provided by nature with a preservative that renders it immune to decay. Cedar contains no pitch or resin and for this reason is recognized as one of the most fire-resistant commercial soft woods.

Edham Stained Shingles are made only from the *vertical grain* heartwood that eliminates cupping and warping.

These natural shingles carry the Certificate of Approval of the Red Cedar Shingle Bureau and are manufactured and kiln dried in accordance with the standards of the United States Department of Commerce. When laid, the natural individuality of shingle widths provides an interesting architectural elevation.

Edham Staining Process

Vertical grain Western Red Cedar natural shingles are individually stained with pure mineral colors ground in linseed oil. Natural shingles are first inspected, then pre-heated to increase stain absorption and penetration. Stains are then flooded over the shingles individually, after which they are brushed and air blasted to distribute the stain evenly. The linseed oil content of the stain is then oxidized by thermometer-controlled heat treatment, and the final step is another careful inspection, and packing.

Available in a Wide Variety of Colors

Highest grade mineral pigments and oils combine to produce a wide range of shingles colors—two shades of green, four shades of brown, five shades of gray—as well as tan, red, black, and prime white.

Edham Stained Shingles are supplied in standard lengths and thicknesses. Both hand-rived and machine-rived shakes, stained by the Edham process, are also available.

Architect's Sample Pads

(Actual Samples)

These sample pads contain 16-in. shingles, stained by the Edham process. The full range of colors is shown. A request on your letterhead is all that is necessary.



Color and Planning Service

A Service Department is maintained to co-operate with architects, contractors and builders. Color suggestions and layouts supplied on request. An architects file folder, containing such information as recommended exposures, covering capacity of various sizes of shingles, together with illustrative plates, will be sent without obligation on request.

ARCH ROOF CONSTRUCTION CO., INC.

Engineers and Contractors

55 West 42nd Street, NEW YORK, N. Y.

DISTRICT ENGINEERS

TELEPHONE
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LONG SPAN ROOF ARCHES

Scope of Application and Service

Design, Construction and Erection of LONG SPAN ROOF ARCHES for theaters; auditoriums; convention, exhibition and fair buildings; garages; warehouses; factories; airplane and dirigible hangars; gymnasiums; skating rinks; bowling alleys, and all buildings where unobstructed space, maximum light and ventilation are desired.

ARCH ROOF CONSTRUCTION CO., INC., will design arches, supply all materials and do the erection, or ordinary materials can be supplied and erection done by local contractors. Co-operation is offered to architects, engineers and contractors in planning the most economical and efficient design for particular buildings.

A request will bring additional information.

Field Buildings

Our field or sports buildings are so erected that they can be used for auditoriums, theatres, gymnasiums, for ice hockey, etc. These buildings are easily interchangeable (without structural changes) permitting daily varied activities in one efficient structure, eliminating the need for several infrequently used buildings.

Spans to Over 400 Feet

We use short lengths of the usual structural materials in the design and economical construction of buildings having spans up to 400 feet or more, where unobstructed space (no columns, posts or trusses) is desired. Heights to suit.

Strength

Arch roof construction can be of timber or steel or a combination of both. Standard structural shapes and sizes are employed in a patented design with patented connections to produce a roof of unusual strength. It may be fireproof, fire-retardant or non-fireproof.

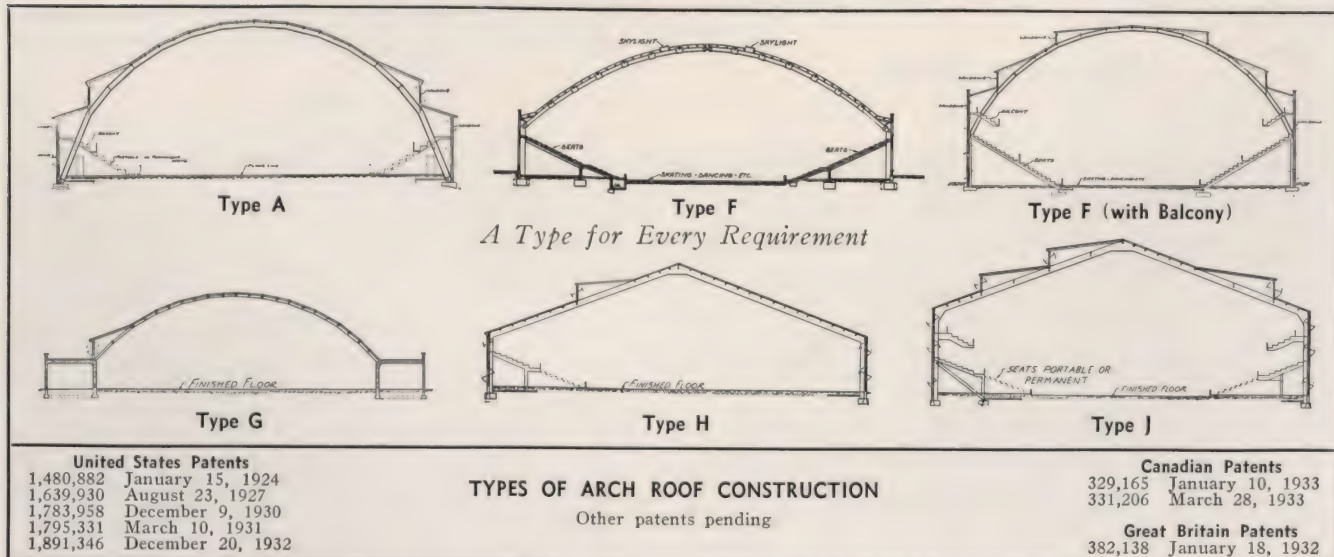
Design

All our arches are scientifically designed as hingeless, one, two, or three-hinged arches, and any competent structural engineer can design and check our arches.

In our design, ample provision is always made for all dead, live and unbalanced loads, rib shortening, temperature variation, etc.



Chevrolet Amphitheater, General Motors Exhibit, Century of Progress, Chicago, Ill.



LAMELLA ROOF SYNDICATE, INC.

45 West 45th Street, NEW YORK, N. Y.

(Holding Company for Lamella Patents in United States, Canada and Mexico)

AUTHORIZED LAMELLA LICENSEES

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Lamella Constructions, Inc.
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Lamella Trussless Roofs, Inc.
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Lamella Roof Co.
PHOENIX, ARIZ., 806 W. Madison Street
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LOS ANGELES, CALIF., 754 E. 29th Street
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OAKLAND, CALIF., 405 Builders Exchange Bldg.
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PORTLAND, ORE., 232 Worcester Building
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SEATTLE, WASH., 1006 Securities Bldg.
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Lamella Trussless Roofs (Ontario) Ltd.
VANCOUVER, B. C., 1551 Granville Street
Pacific Coast Pipe Co., Ltd.



Trussless Roofs

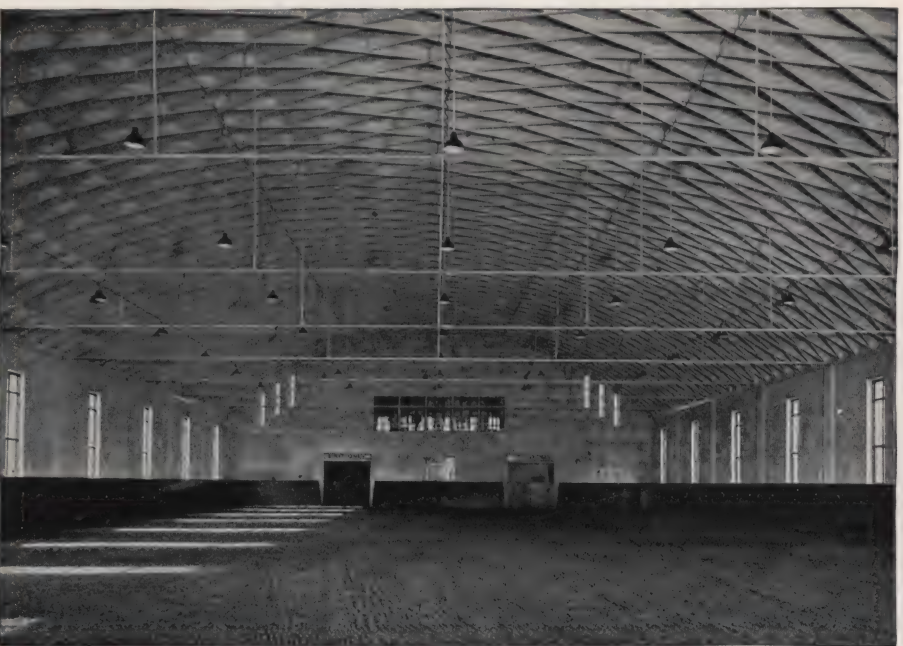
Lamella Trussless Roofs are arch structures of wood or steel consisting of a series of short sections arranged in a diamond pattern to form a continuous arch. They are designed according to accepted engineering practice in conformance with local climatic conditions and specific requirements of local building codes. Hundreds of Lamella Trussless Roofs, comprising millions of square feet of roof area, have been designed and erected in the United States in spans up to 165 ft., and even wider spans are feasible.

Fire Resisting Qualities

Fire resisting qualities are rated in all localities at least equal to unprotected steel with open rafters.

Acoustical Qualities

Lamella Trussless Roofs have proven their acoustical



A Typical Lamella Roof (Tie Rod Type)

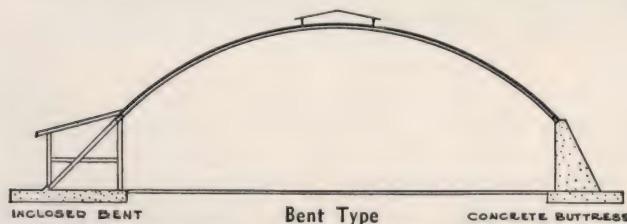
The tie rods are eliminated if the Bent Type is used

qualities by their repeated installation in auditoriums, churches and community center buildings. The diamond network reflects sound without causing reverberations.

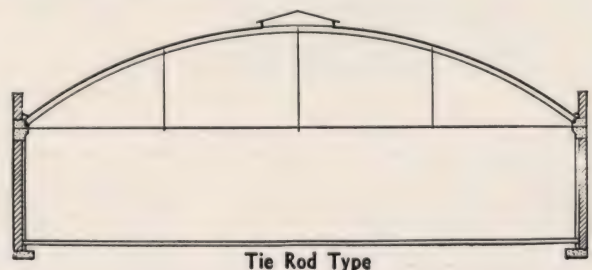
Service

The licensees maintain trained engineering staffs to assist the architect in the detailed design of the roof and its connections to other parts of the building.

Detailed drawings, together with the necessary stress analysis, are promptly furnished.



Lamella Trussless roofs may be curved down at the ends, thereby forming a cloistered roof of four or more sides. Lamella roofs have been built in many types and shapes and can be designed to suit almost any building



ROOF STRUCTURES, INC.

Specialists in Ornamental and Commercial Wooden Structures

TELEPHONE
BRyant 9-8532

45 West 45th Street, NEW YORK, N. Y.

Affiliate: Roof Structures, Inc., 418 Olive Street, St. Louis, Mo.

LICENSED BY TIMBER ENGINEERING CO. FOR MODERN TIMBER CONNECTORS

Custom Built Wood Trusses

Design—Designed by registered engineers familiar with the requirements of building departments and experienced with glued-up construction and modern timber connectors.

Construction—Constructed with structural grades of lumber. The curved chords are glued-up and bolted in laminations and finished as one piece. Surfaces are smooth (sanded) or rustic (hand adzed). Mouldings on the continuous laminations follow the natural run of the grain and the unsightly opening of joints or tears along the mouldings are prevented.

Boxing-in of Steel Trusses—This is accomplished by the same glued-up construction, with moulded laminations, giving the appearance of ornamental wood trusses.

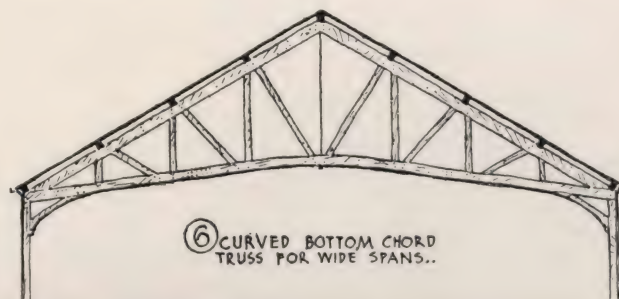
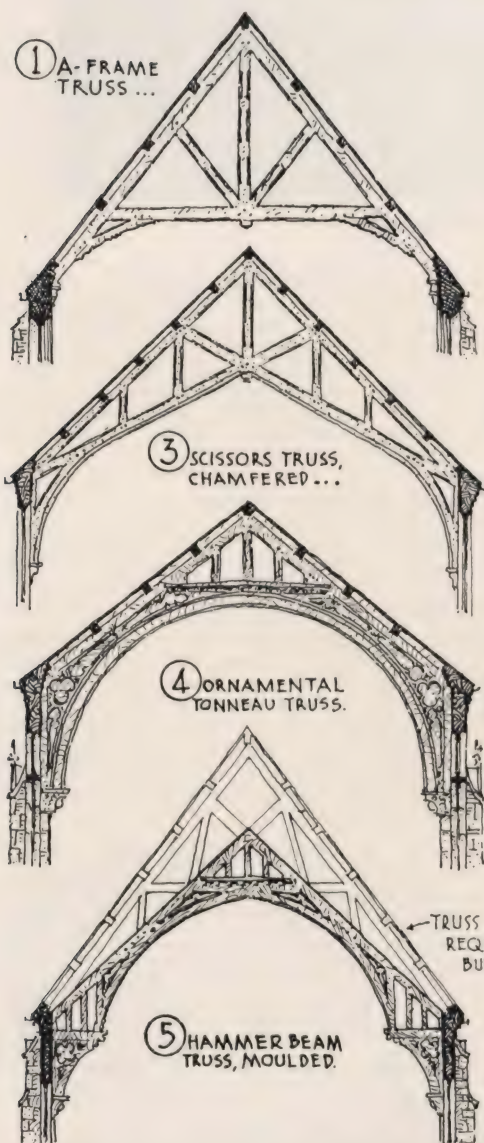
Erection—Is handled by experienced crews assembling the pre-fitted factory-built sections or members, and finishing each truss with first-class workmanship.

Types—Truss Types are not restricted to those shown but may vary with the individual designs of the architect and special load conditions.

Scope of Activities and Service

We also construct and design—in addition to commercial Bow-string trusses—arch centerings, radio towers, timber bridges and other wooden structures requiring the skill and knowledge of a specialist.

Service—Tentative designs and estimates of cost are furnished without obligation. To facilitate this, state (a) type, pitch, finish and number of trusses; (b) span and spacing; (c) live and dead loads to be carried; (d) location of building.

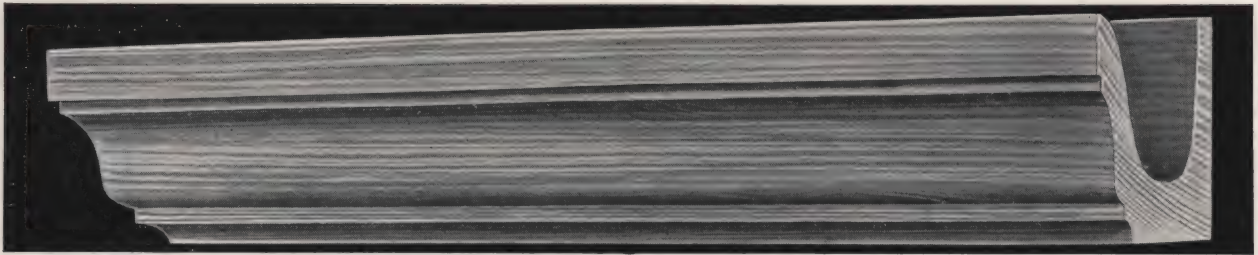


Type ⑦ Commercial Truss Installation, Garage, International Mack Truck Company, 625 West 42nd Street, New York, N. Y.—100 Foot Span
ELWYN E. SEELYE, Engineers; TURNER CONSTRUCTION Co., General Contractors

LONG FIR GUTTER COMPANY

Pioneers of "Improved" O.G. Fir Gutters

CADIZ, OHIO



The New Exclusive "Shadowline" Design of "Improved" O.G. Fir Gutters (Patented)

Fir Gutters for Beauty, Permanence and Economy

Beauty—"Improved" O.G. Fir Gutters possess that outstanding beauty which can only come through the use of the right materials to meet definite requirements. These gutters, with their excellent proportions and refined lines lend distinction to any cornice detail. There is nothing artificial about this modern fir gutter; it harmonizes with any type of architecture, wall material or roofing. There are no hard angles or awkward curves to destroy a carefully designed effect. Moulded wood of correct design is always appropriate.

Permanence—"Improved" O.G. Fir Gutters are made of clear, carefully selected durable Douglas Fir. They cannot corrode or disintegrate when exposed to the natural elements, smoke, fumes or acids. They cannot possibly contract or expand under varying weather conditions. Ice, snow or winds fail to tear them loose from the building. Leaning ladders cannot damage them. A carpenter can walk on them without doing the least damage. Strength and rigidity are special features.

Economy—Their first cost is no more than that of an ordinary gutter. Ultimately the cost is much less. When they are used no roof mould is necessary. They need only be painted when the house is painted with any good paint. But, the biggest economy lies in their durability. When properly installed *they last a lifetime.*

Manufacture and Shipping

"Improved" O.G. Fir Gutters are available through any retail lumber dealer anywhere in the United States. Approximately one-half million feet are stored in our Cadiz, Ohio, warehouse in assorted sizes, for prompt L.C.L. shipments. Stock and finished sizes are shown in table. Other sizes and patterns furnished on special order.

"Improved"
O.G. FIR
GUTTERS



STOCK SIZES—"SHADOWLINE" DESIGN

Lengths up to 40 ft. in all sizes for immediate shipment from Cadiz, Ohio

Trade size, in.	Finished size, in.	Back beveled and worked higher than front, in.
3x5	2 5/8 x 4 5/8	1/8
4x5	3 3/8 x 4 5/8	3/8
4x6	3 3/8 x 5 5/8	3/8
5x7	4 3/8 x 6 5/8	3/4
6x8	5 3/8 x 7 5/8	3/4

Reasonable allowance should be made from finished sizes for slight shrinkage in drying.

Aluminum Coated

The new "Shadowline" design gutters are now furnished thoroughly seasoned and completely coated with aluminum paint. Moisture—lumber's age-old enemy—is thus defeated and warping and shrinkage is retarded by this protective coating which provides a good "tooth" for top or finishing coats to cling to.

Leakproof Brass Fittings

A complete line of leakproof fittings of solid brass are now available for ends, joints, and miters. They are the last word in modern fir gutter development.

The Gutter Used by Many Railroads

Railroad structures provide a severe test for any gutter, due to disintegrating effect of smoke and gases. Probably there can be no stronger proof of the lasting qualities of "Improved" O.G. Fir Gutters than the fact that many Class 1 railroads are using them for stations, freight depots and all types of railway buildings with entire satisfaction. Some of these are: Pennsylvania, New York Central, Rock Island, Chicago & North Western, Atlantic Coast Line, etc.

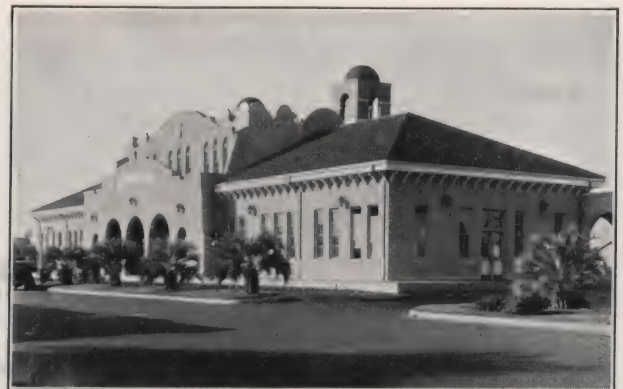
Architects' Specifications

Gutters shall be "Shadowline" design O.G. Fir Gutters, thoroughly seasoned and aluminum coated as furnished by the LONG FIR GUTTER COMPANY, Cadiz, Ohio, attached to the building perfectly level so that straight horizontal lines necessary to appearance and correct architectural design may be retained. Secure gutters to building with zinc coated iron nails or coarse threaded brass screws. For making joints, miters and ends use specially designed Brass Leakproof Fittings as furnished by the LONG FIR GUTTER COMPANY. Down-spout connections shall be made as shown in details.

Finish—Apply trim color of building to outside of gutter and give the inside, or trough, a thorough application of any good protective coating—preferably aluminum paint.



5x7-in. "Shadowline" Fir Gutters on L. D. Houck Residence, Shaker Heights, Cleveland, Ohio
JOHN SHERWOOD KELLEY, Architect



5x7-in. "Shadowline" Fir Gutters on Atlantic Coast Line R.R. Station, Orlando, Fla.
B. E. WIDDER COMPANY, Architect, Wilmington, N. C.

**SKYLIGHTS AND
VENTILATORS**
- S E C T I O N -

9

CATALOGS 1 to 26

AMERICAN 3 WAY-LUXFER PRISM CO.

Skylights and Ventilators—Stationary and Ventilating

1301-1305 South 55th Court
CICERO, ILL.
(Suburb of Chicago)

517 West 45th Street
NEW YORK, N. Y.

For Our Roof Lights, Sidewalk Vault Lights, and Diffusing Glass, see File Index

Products

TOP HUNG PRESSED STEEL SASH—puttyless.
VENTILATING SKYLIGHTS—puttyless and putty models.
STATIONARY SKYLIGHTS—puttyless and putty models.
STEELEAD PUTTYLESS SKYLIGHTS—patented.
KUPE AUTOMATIC STAGE VENTILATORS—patented.

American Pressed Steel Top Hung Sash

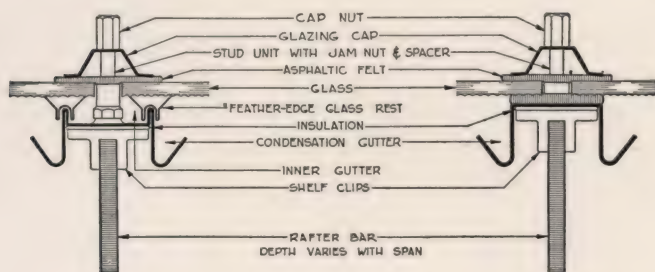


These continuous top hung windows are formed of copper bearing galvanized steel and fabricated in sizes to conform with accepted practice. The sash is arranged for puttyless glazing with metal caps for the glazing bars secured with studs and cap nuts.

Operators are rack and pinion or tension type adapted to manual or motor control.

Structural Puttyless Skylights Models P-4—P-5

A stationary puttyless skylight designed particularly for long spans. The rafter bar or supporting member is a flat steel section. Glass rests, glazing caps and metal trim may be galvanized copper bearing steel, aluminum or copper.



Ventilating Skylights

American Ventilating Skylights are backed by over one million square feet of installations made during the last ten years. They answer a definite need for a skylight that combines *natural and effective ventilation with daylight*. This type of skylight is furnished in puttyless and putty models. The sheet metal parts of these skylights can be furnished in galvanized copper bearing steel, aluminum or copper. Ventilating sash is carried on substantial steel trusses spaced approximately 6 ft. on centers. No truss members less than 2x1½x1/8-in. angles. Generally the types may be described as follows:



Type J



Type F



Type JR



Type JL

Type J—A full ventilating type, wherein the sash is hinged at the ridge and opened from the curb, thus providing a maximum vent area. Each side is controlled by a separate operator.

Type F—A ridge ventilating type, consisting of a pair of constant sized movable sash at the ridge and fixed sash below. Both vent sash may be operated independently or simultaneously by means of a single control. Provides maximum weather-tightness with efficient ventilation and daylighting.

Type JR—A full ventilating type, designed especially for use on widths under 6 ft. Also applicable as a continuous ridge ventilator for sawtooth construction.

Type JL—A ridge ventilating type, designed for spans over 12 ft. The upper or vent sash is in widths corresponding to the standard Type J widths. Thus continuous ridge openings of 6, 8, 10 and 12 ft. may be had.

VENTILATING SKYLIGHT DATA

Type	Standard widths	Max. length vent section	Sq. ft. opening per lin. ft.	Materials
JR	Min. 3 ft. Max. 5 ft. 11 in.	28 ft. 22 ft.	Width x .67	18-ga. galvanized steel 20-oz. copper 14-ga. aluminum
F	6, 8, 10, 12 ft.	28 ft.	2.67	18-ga. galvanized steel 20-oz. copper 14-ga. aluminum
J	6, 8, 10, 12 ft.	52, 46, 40, 34 ft.	Width x .25	18-ga. galvanized steel 32-oz. copper 14-ga. aluminum
JL	12, 14, 16, 18, 20 ft. Over 20 ft. special	See Type "J"	See Type "J"	18-ga. galvanized steel 32-oz. copper 14-ga. aluminum

The KuPe Automatic Stage Ventilator

The KuPe Automatic Stage Ventilators and skylights No. 67 are universally recognized as the standard of excellence and reliability, approved by the Board of Fire Underwriters, architects and municipal authorities for theatres, schools, auditoriums, etc.

A combined ventilator and weatherproof skylight, it consists of a metal frame with hipped glass roof and sides provided with bottom hinged metal shutters. Flexible bronze cable equipped with fusible links, passes over brass pulleys and connects the top of each shutter to a main rope, also provided with fusible links, which extends down to the stage floor. Under ordinary conditions the shutters are hand operated, but in times of

emergency may be quickly opened by cutting the rope. In case of fire, operation is effected either individually or simultaneously by melting of the fusible links.

We manufacture and install these ventilators to any dimension complete, glazed with 1½ in. sheet glass, with woven wire screen under the glass. We use standard gauges of galvanized steel (or copper) and the shutter hinge plates and pins are of brass.



"KuPe" Standard Automatic Stage Ventilator No. 67

(Patented)

THE G. DROUVÉ COMPANY

TELEPHONE
Bridgeport 5-3161 and 2

POST OFFICE ADDRESS
BRIDGEPORT, CONN.

FACTORY
Fairfield, Conn.

REPRESENTATIVES

PITTSBURGH, PA., E. K. Geyser & Company, Fulton Building
PHILADELPHIA, PA., Warren E. Quillman, 112 South 16th Street

DETROIT, MICH., Walter R. King Company, Curtis Building
ATLANTA, GA., Applewhite & Lawler Company

Products

"ANTI-PLUVIUS" PUTTYLESS SKYLIGHTS,
Type "A" and Type "B."
DROUVÉ ROLLER HINGE TURRET SASH.



"DROU-VE-LITE" PUTTYLESS GLASS STRUCTURES, Type "C" and Type "D."

DROUVÉ CONTINUOUS RIDGE VENTILATORS,
Flush Type and Raised Type.

SKYLIGHTING FACTS

In selecting and purchasing Drouvé skylights for your requirements, you are, today, obtaining without cost, our 48 years of practical experience in the manufacturing and installing of puttyless skylights which is important.

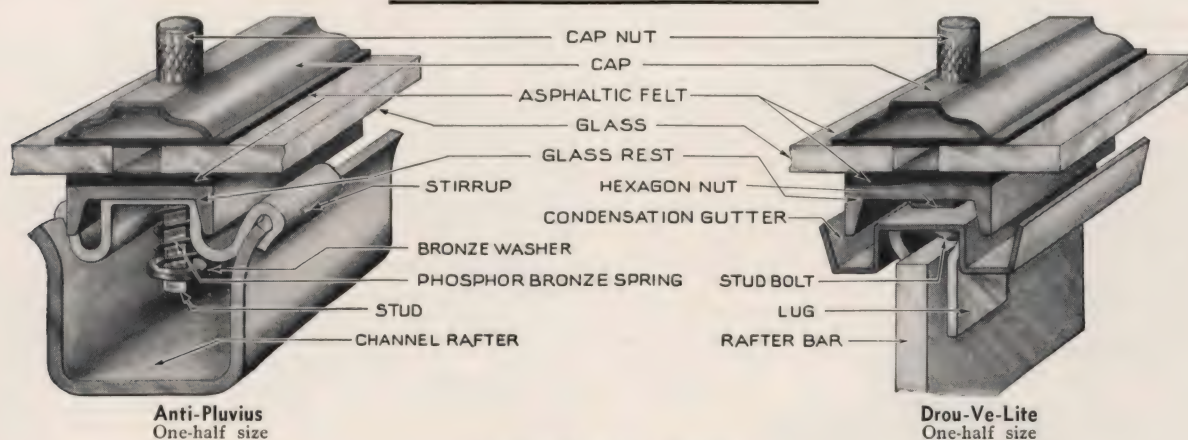
We make the statement without fear of contradiction that at least 10 years of practical experience is required for a skylight construction before one knows very much about it; that is, as to its proper or improper functioning under actual atmospheric and climatic conditions. It is apparently simple enough to design a skylight on paper but time and experience have proven that only a very few of the numerous designs suggested in the past 40 years have actually proven satisfactory and even these have required changes in detail and construction based on experience.

Drouvé skylights are today, in their construction, based entirely on experience, the stage of theory long since having been passed. Drouvé skylights are constructed to successfully meet every atmospheric condition that re-acts against steel and glass. All of the metal members incorporated in our skylights are essential to proper skylight construction. The use of two separate members, one for the support of the skylight structure

and the other for the glass rest, is one of the important features to be found in Drouvé skylights. Non-corrosive materials are used where they should be and all metals in our skylights are, as to gauge of materials, of the proper size for the work they are to do. Drouvé skylights are, in their present stage of perfection, the ideal constructions in materials, workmanship and long life.

Among other things, it is interesting to note that after 48 years, we are still using what is known as "lapped glass" rather than "butt glass" construction in our skylights. We do this, not because it makes for a cheaper construction, or, not because we cannot build a butt glass construction, but only that after exhaustive experimenting, we have definitely determined that it is not possible to butt glass in a skylight construction and have it give 100% satisfactory service. Unfortunately, the lapped glass method of construction is more expensive, in first cost, but again we remind you it is essential to good skylight construction.

In short, every Drouvé skylight built by us today is a monument to ourselves and a continuous source of satisfaction to those who own them and a credit to those architects who specify them.



DROUVÉ SKYLIGHTS

The "Anti-Pluvius" skylight shown in sketch above has our unconditional guarantee as to satisfactory service, materials and workmanship. It has, as you will note from the sketch, ten different parts in its construction aside from the glass. There are, of course, in addition to these, the curb and ridge members; all necessary to the end we have strived to achieve. All of these parts without exception are sufficiently heavy enough and strong enough for the work they are to do. This skylight is architecturally and structurally well balanced.

Above we show a sketch of our "Drou-Ve-Lite" sky-

light. The "Drou-Ve-Lite" skylight is our crowning achievement particularly for long span work.

We have incorporated in it the same essential features to be found in our "Anti-Pluvius" skylight, that make for proper skylight construction. This also has ten different parts in its construction aside from the glass. There are, of course, in addition to these, the curb and ridge members. Also, like our "Anti-Pluvius" construction, these parts, as to size and weight, are sufficiently heavy enough and strong enough for the work they are to do.

GENERAL SHEET METAL WORKS, INC.

Manufacturers of Cibulas Puttyless Skylights, Ventilators and Turrets
BRIDGEPORT, CONN.

REPRESENTATIVES IN PRINCIPAL CITIES

CIBULAS SKYLIGHTS—NON-FREEZING, PUTTYLESS

(PATENT NO. 1656044—JAN. 10, 1928)

No Water—No Ice—No Trouble

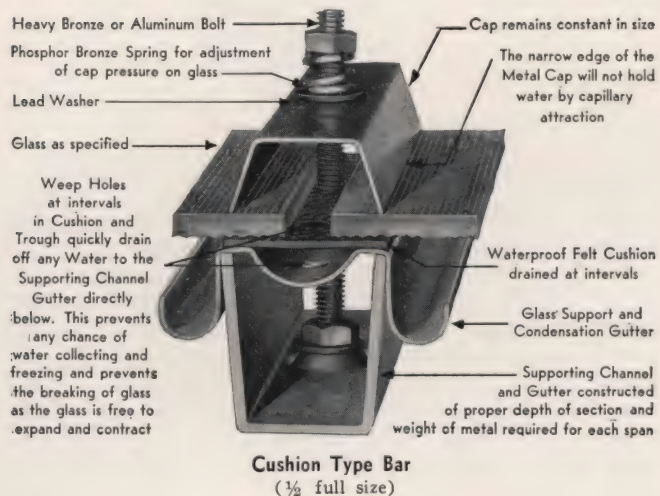
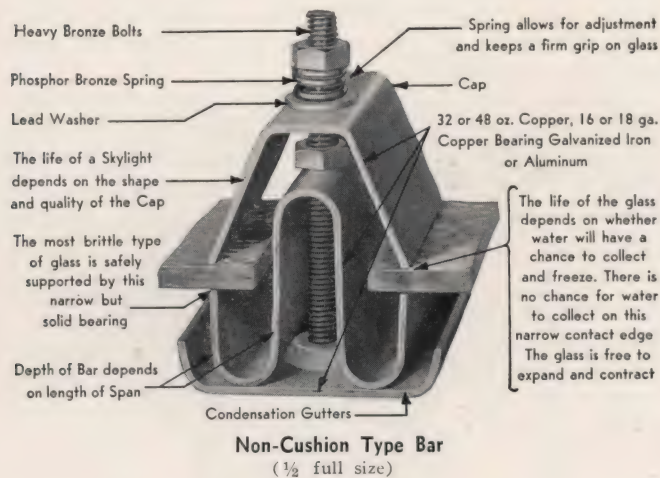
In all Cibulas Skylights the breakage of glass is reduced to a minimum through the elimination of possible collection of water and its freezing. There is no chance for capillary attraction of water due to the thin but firm bearing of the metal. The glass is free to expand and contract at all times.

The freezing of water on skylights and the inability of the glass to expand and contract is the greatest cause of glass breakage.

Special Features

The skylight bars shown below are made of heavy gauge, non-corrosive metals, 18 or 16-gauge copper, aluminum or galvanized copper bearing iron, as desired or specified.

They are designed for each job to support 35 or 40 lb.



per sq. ft. to take care of snow or wind loads, the depth of the bars varying with the span.

These bars are perfectly weathertight. They dispose of all condensation. Gutters are made large enough to carry off water and prevent accumulation of dust and dirt.

The Cibulas Puttyless Skylights are made in copper, aluminum and copper bearing galvanized iron. They are furnished with or without ventilation for hip, turret, sawtooth, double pitch, single pitch and marquise skylights. They are glazed with either ribbed or rough, plain or wire glass, or actinic glass.

When desired, our engineers will furnish complete detail drawings and estimates without obligating the architect.

Installations

A list of installations will be gladly sent on request.

Specifications for Cibulas Non-Cushion Type Puttyless Skylight

Galvanized Iron—Furnish and erect where shown on plans Cibulas Non-cushion Skylights as manufactured by the GENERAL SHEET METAL WORKS, INC., Bridgeport, Conn. To be constructed entirely of galvanized iron with supporting members sufficiently heavy to support the load according to the span. Skylight shall be assembled with $\frac{3}{8}$ -in. bronze bolts and nuts and phosphor bronze springs. There shall be no packing of any sort. Skylight shall be provided with condensation gutters. Glass shall be either ribbed or rough, plain or wire glass, or actinic glass.

Copper—Furnish and erect where shown on plans Cibulas Non-cushion Skylights as manufactured by the GENERAL SHEET METAL WORKS, INC., Bridgeport, Conn. To be constructed entirely of copper with supporting members sufficiently heavy to support the load according to the span. Caps and condensation gutters shall be of 16-oz. copper. Skylight shall be assembled with $\frac{3}{8}$ -in. bronze bolts and nuts and phosphor bronze springs. There shall be no packing of any sort. Glass shall be either ribbed or rough, plain or wire glass, or actinic glass.

Aluminum—Furnish and erect where shown on plans Cibulas Non-cushion Skylights as manufactured by the GENERAL SHEET METAL WORKS, INC., Bridgeport, Conn. To be constructed entirely of aluminum with supporting members sufficiently heavy to support the load according to the span. Caps and condensation gutters shall be 24 B&S gauge aluminum. Skylight shall be assembled with $\frac{3}{8}$ -in. aluminum bolts and nuts and phosphor bronze springs. There shall be no packing of any sort. Glass shall be either ribbed or rough, plain or wire glass, or actinic glass.

Specifications for Cibulas Cushion Type Puttyless Skylight

Galvanized Iron—Furnish and erect where shown on plans Cibulas Cushion Skylights as manufactured by the GENERAL SHEET METAL WORKS, INC., Bridgeport, Conn. To be constructed entirely of galvanized iron with supporting member sufficiently heavy to support the load according to the span. Skylight shall be assembled with $\frac{3}{8}$ -in. bronze bolts and nuts and phosphor bronze springs. Packing shall be used only as a glass rest. Skylight shall have a combined condensation gutter and trough punched at intervals with drain holes to carry off any moisture seeping in at the glass joints. Glass shall be either ribbed or rough, plain or wire glass, or actinic glass.

Copper—Furnish and erect where shown on plans Cibulas Cushion Skylights, as manufactured by the GENERAL SHEET METAL WORKS, INC., Bridgeport, Conn. To be constructed entirely of copper with supporting member sufficiently heavy to support the load according to the span. Caps and condensation gutters shall be 16-oz. copper. Skylight shall be assembled with $\frac{3}{8}$ -in. bronze bolts and nuts and phosphor bronze springs. Packing shall be used only as a glass rest. Skylight shall have a combined condensation gutter and trough punched at intervals with drain holes to carry off any moisture seeping in at the glass joints. Glass shall be either ribbed or rough, plain or wire glass, or actinic glass.

Aluminum—Furnish and erect where shown on plans Cibulas Cushion Skylights, as manufactured by the GENERAL SHEET METAL WORKS, INC., Bridgeport, Conn. To be constructed entirely of aluminum with supporting member sufficiently heavy to support the load according to the span. Caps and condensation gutters shall be 24 B&S gauge aluminum. Skylight shall be assembled with $\frac{3}{8}$ -in. aluminum bolts and nuts and phosphor bronze springs. Packing shall be used only as a glass rest. Skylight shall have a combined condensation gutter and trough punched at intervals with drain holes to carry off any moisture seeping in at the glass joints. Glass shall be either ribbed or rough, plain or wire glass, or actinic glass.

CIBULAS PUTTYLESS TURRETS

(PATENT NO. 1905802—APRIL 25, 1933)

After much experimenting, the GENERAL SHEET METAL WORKS, INC. have succeeded in developing a puttyless turret which is enduring and, to all practical purposes, faultless. Here are some of the many good features of this construction:

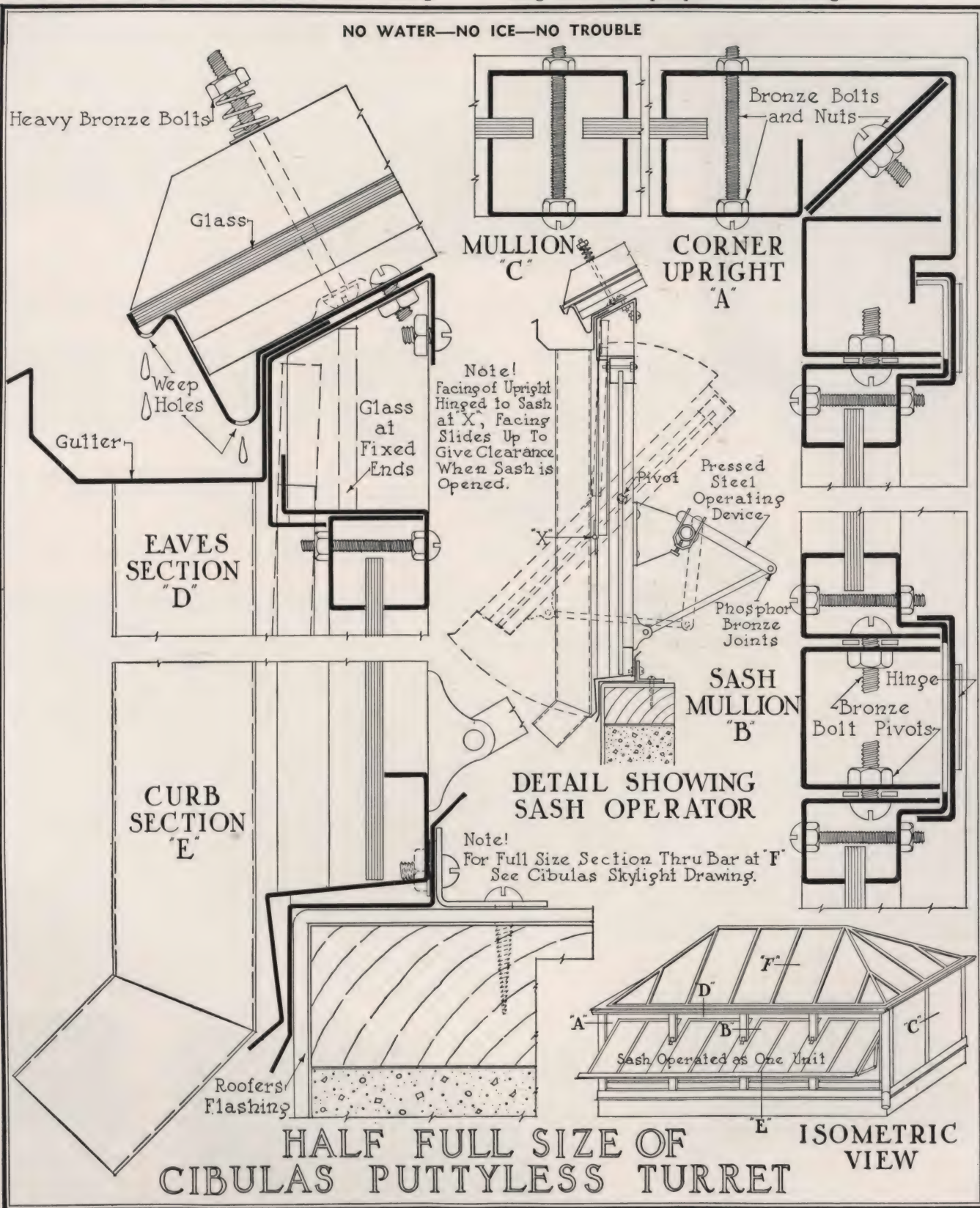
Heavy gauge galvanized iron, aluminum or copper.

Two to three times heavier metal than ordinary construction, thus can be built larger without structural steel framing.

Rain and weather proof. No putty, packing or solder used. Center pivoted sash, counterbalanced.

Greatest amount of ventilation.

Can be controlled from minimum to maximum ventilation. Easy in operation, opens in ten seconds. Principal parts of operating device of pressed steel. Movable joints of operating device have phosphor bronze bushings.



MILCOR STEEL COMPANY

MILWAUKEE, WIS.

CHICAGO, ILL.

KANSAS CITY, MO.

CANTON, OHIO

LA CROSSE, WIS.

SALES OFFICES IN PRINCIPAL CITIES

For Our Catalogues on Milcor Fireproof Products, Ventilators, Access Doors, Steel Ceilings and Steel Decks, see File Index

MILCOR SUPER EXTRUDED ALUMINUM SKYLIGHTS

U. S. Pat. No. 1,921,303

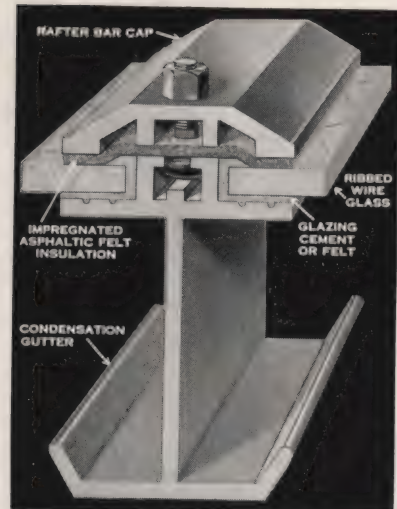
Alcoa Aluminum, extruded into one piece sections having many structural advantages, has made possible this new type of skylight. It is clearly evident from the illustration of the rafter bar to the left, that simplicity is the keynote of super extruded aluminum construction. Condensation gutters, shoulders to hold the glass, and other necessary factors are integral with the bar, thus eliminating the welding, mitering and fitting so often required in ordinary skylights.

Made either from Alcoa 43S or 53ST-5 alloy aluminum and therefore free from corrosion, this skylight need never be painted. Because of its light weight, it does not require heavy roof construction. It is shipped knocked down, crated and boxed, and is easily assembled on the job.

Specification Data—Skylights, where shown on drawings, shall be Milcor Super Extruded Aluminum Skylights, erected in accordance with the manufacturer's instructions on curbs shown on detail drawings.

All rafter bars shall be fastened to ridge and curb clips with not less than two rivets in each and these clips shall be fastened to ridge and curb with two bolts each. All bolts, nuts and rivets are to be aluminum.

Glass shall be (3/4 in. ribbed wire) (1/2 in. plain ribbed) securely set in approved glazing cement or felt as instructed by manufacturer. After skylight is glazed all bar and ridge caps are to be securely cap and glass. Skylight flashing shall be No. 20 B&S gauge as furnished with the skylights and wherever such flashing comes in contact with metal other than aluminum an insulating felt shall be used to prevent electrolysis.



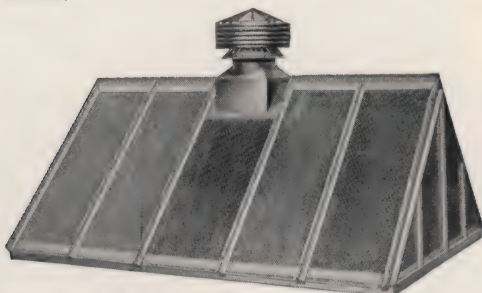
Puttied or Puttyless Construction; Single or Double Glass Construction
Above illustration not full size. Made in three sizes

Features

1. Free from corrosion—made completely of aluminum.
2. Simple construction.
3. Easy to erect or dismantle.
4. Clean appearance—no painting.
5. Light in weight.
6. No condensation trouble.
7. No cross trusses.
8. Any size—all types.
9. Complete with fittings.

Milcor Super Extruded Aluminum Skylights may be easily applied on any type of roofing. The curb flashing is adjustable and is made of aluminum.

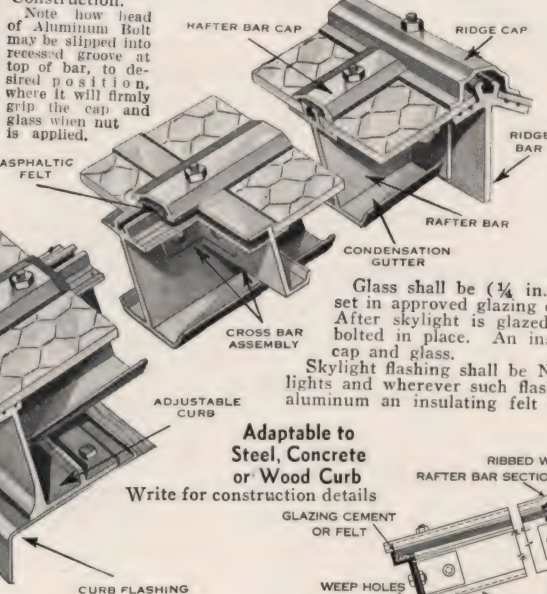
Detail at right shows single pitched application on corrugated roofing. Note the special G. I. Adapter Flashing corrugated to fit roofing. Single pitched skylights have a slightly different angle than the roof itself. The detail shows the top of the skylight even with the roof surface, while the lower edge stands out considerably, assuring a perfect water drain over the skylight onto the roof below.



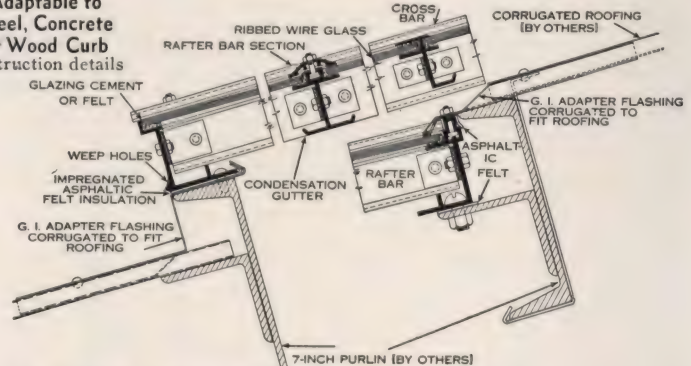
Milcor Ventilators (see File Index) are furnished with skylights if desired. Puttyless Bar Construction makes glass replacements easy



Left:
Details of Extruded Aluminum Construction.

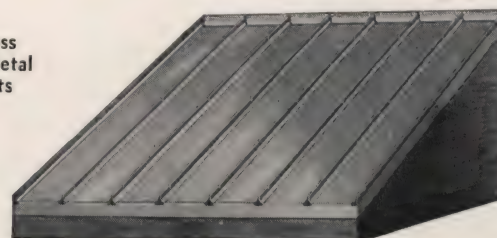


Adaptable to Steel, Concrete or Wood Curb
Write for construction details



In addition to Super Extruded Aluminum Skylights, MILCOR STEEL COMPANY manufactures many other types and designs, from any desired gauge metal, Armco Ingot Iron, or Toncan Iron, Galvanized Copper Alloy Steel, and Pure Copper. Glass is furnished with all skylights unless otherwise specified.

Puttyless Sheet Metal Skylights



Detail of Puttyless Bar Construction. Copper clips are removable for changing glass



PHILADELPHIA NAVY YARD
FOUNDRY BUILDING
21,000 sq. ft. Side Wall Construction



PERFECT CIRCLE PISTON RING CO.
HAGERSTOWN, INDIANA
7,500 sq. ft. C. W. G. Sawtooth Construction

CORRUGATED WIRE GLASS

SKYLIGHTS AND SIDE WALL CONSTRUCTION



SLUDGE BEDS
BURLINGTON, N. J.
All C. W. G. Buildings



GENERAL STEEL CASTINGS CO.
EDDYSTONE, PA.
323,000 sq. ft. Monitor Roofs

PENNSYLVANIA WIRE GLASS COMPANY
1612 MARKET STREET
PHILADELPHIA, PA.

CORRUGATED WIRE GLASS SKYLIGHTS

Corrugated Wire Glass (CWG) is a corrugated sheet of glass with wire netting incorporated in it during the process of manufacture. Owing to the corrugations it has strength many times greater than any flat glass of equal thickness. To meet the demand for a strong, substantial skylight CWG was adopted to this use by the PENNSYLVANIA WIRE GLASS COMPANY which has specialized in this form of construction for many years.

CWG Skylights can be placed on a roof of any material, including corrugated iron and corrugated asbestos. CWG can be used for roofs, sidewalls, marquises, canopies and, in fact, wherever daylight is desired.

CWG Skylights offer many points of superiority. Low maintenance costs are an important item. There are no bars to rust or corrode. No supplementary frame is used as they are applied

directly on steel or wood purlins or curbs, and concrete. They have unusual resistance to vibration and temperature changes and are completely weathertight.

Because of the corrugations, rain washes off dirt and dust, making these skylights practically self-cleaning. Being translucent they transmit diffused light with a minimum of shadows.

The Company maintains an engineering service department for consultation regarding skylighting and kindred problems for which there is no charge. Upon receipt of rough sketches or details they will be glad to offer suggestions for CWG Skylights, roofs, etc. Samples of any type of glass manufactured will gladly be mailed on request. For data on Flat Wire Glass and Actinic Glass refer to catalog in the Glass Section of Sweet's File. See File Index.

INDEX TO DETAILS

Plate No.

- P-100 Isometric Detail of Typical Lap Joint.
- P-101 Gable End Skylights with Steel Framing.
- P-102 Single Pitch Skylights with Steel Framing.
- P-103 Concrete Curb Skylights.
- P-104 Concrete Curb Skylights.
- P-105 Skylights on Wood Sheathed Roof.
- P-106 Wood Curb Skylights.
- P-107 Skylights with Cement-tile Roofing.
- P-108 Skylights with Steel-deck Roofing.
- P-109 Sawtooth Skylights with Steel Framing.
- P-110 Sawtooth Skylights with Steel Framing.
- P-111 Sawtooth Skylights with Wood Framing.
- P-112 Skylights on Back Slopes of Sawtooth Framing.
- P-113 Skylights with Corrugated Sheet Metal Roofing.
- P-114 Steel Framed Marquise.

Plate No.

- P-115 Typical Sheet Metal Ventilator Details.
- P-116 Methods of Draining Condensation.
- P-117 Steel Framed Canopies.
- *P-118 to P-124 inclusive.
- 2700 Typical CWG Skylights with corrugated asbestos.
- 2700A Details of CWG with 2½ in. and 2¾ in. pitch corrugated asbestos.
- 2700B Details of CWG with 4.2 in. pitch corrugated asbestos.
- 2825A Standard 10 ft. 0 in. wide Curb Skylight—Steel Frame.
- 2825B Standard 20 ft. 0 in. wide Curb Skylight—Steel Frame.
- 2825C Standard 10 ft. 0 in. and 20 ft. 0 in. wide Skylight Gable-end Details.
- 3551 Details of CWG Ventilating Units.
- 3606 Sludge Bed Details.
- 3606A Sludge Bed Details.

*These sheets will be sent out as they are issued.

SPECIFICATIONS FOR THE INSTALLATION OF CORRUGATED WIRE GLASS

SCOPE OF WORK

I. Work by Others—

All supporting frames, curbs, purlins, ridge-beams, tie-rods and bracing for proper construction shall be provided under another contract.

All roofing, curb and roof flashings, gutters and counter-flashings shall be provided under another contract.

II. Work Required—

The work to be done under this contract includes the furnishing of all labor, materials, equipment and services necessary for, and reasonably incidental to, the erection of (White or Actinic—specify which) Corrugated Wire Glass (in Skylights or Side-Wall Panels), as manufactured by the PENNSYLVANIA WIRE GLASS COMPANY with standard fittings of (specify which) No. 3S8 Aluminum (.032 in. thick), 18-oz. cold rolled copper, 24-gauge galvanized steel (copper bearing) (painted with aluminum), 13-gauge zinc, 24-gauge "Lead Clad" steel, 6-lb. Hoyt hard lead, as shown on the drawings and herein specified.

SHOP DRAWINGS

This Contractor shall furnish the (Architects, Engineers, Purchasers), for their approval before any of the work is executed, complete shop drawings conforming to the recommendations of the manufacturer.

CONSTRUCTION AND ERECTION

This Contractor shall erect the Corrugated Wire Glass exactly as prescribed in the approved drawings and recommendations of the PENNSYLVANIA WIRE GLASS COMPANY. (While the specification clause above will cover the erection of Corrugated Wire Glass, under the heading of "Notes" below, there are several clauses which may be included where deemed necessary.)

NOTES

(a) No sheet of Corrugated Wire Glass shall exceed 27¼ in. in width, and, no single sheet shall span more than 60 in. clear opening (up the slope) without an intermediate support. Where glass is set at an angle of 60 degrees, or more, from the horizontal, the maximum clear span may extend to 96 in. (up the slope). Corrugated Wire Glass covering openings greater than those mentioned must have an intermediate support or arrangements must be made to use two or more lights of glass.

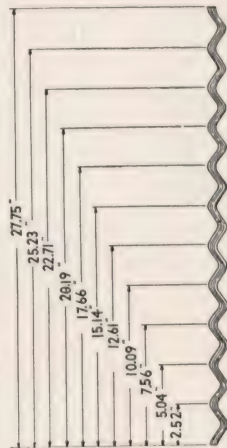
(b) The sheets of glass shall be laid edge to edge (not lapping) with ½-in. spaces between the sheets and the open joints so formed shall be covered with exterior metal cover caps and metal inner strips which conform to the corrugations of the glass. The exterior cover caps shall have an asphaltic lining. The caps and inner strips, to complete the joint, shall be bolted together by bolts passing through the caps and inner strips and between the sheets of glass approximately 9 in. center to center.

(c) Where structural supports occur, clips, engaged by bolts passing through the cover caps, shall be used to hold the glass securely in place.

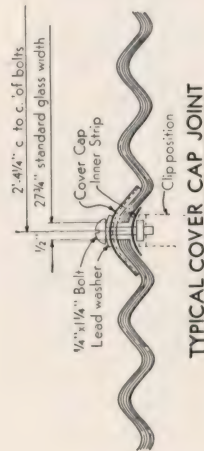
(d) Each light of glass shall have a firm, even bearing and wherever any sheet of glass is applied to structural work such as curbs, purlins, etc.), it shall be cushioned with an asphalt strip. Where it laps over other glass, it shall be cushioned with a sealing strip. At the bottom (or eaves) of Corrugated Wire Glass construction and at the top (in conjunction with the ridge or flashings), the openings caused by the corrugations of the glass shall be filled with a sealing strip especially designed and supplied for this purpose.

STANDARD SIZE AND SPACING FOR CORRUGATED WIRE GLASS

DEEP ANGLE			
Lts.	Width	Lts.	Width
1	2'-4 1/4"	51	130'-0 3/4"
2	4'-8 1/2"	52	122'-5 1/4"
3	7'-0 3/4"	53	122'-0 1/4"
4	9'-5"	54	127'-1 1/4"
5	11'-9 1/4"	55	127'-5 1/4"
6	14'-1 1/2"	56	131'-10"
7	16'-5 3/4"	57	134'-2 1/4"
8	18'-10"	58	136'-6 3/4"
9	21'-2 1/4"	59	138'-10 3/4"
10	23'-6 3/4"	60	141'-3"
11	25'-10 3/4"	61	143'-7 1/4"
12	28'-3"	62	145'-11 1/4"
13	30'-7 1/4"	63	148'-3 3/4"
14	32'-11 1/2"	64	150'-8"
15	35'-3"	65	153'-0 1/4"
16	37'-8"	66	155'-4 1/4"
17	40'-0 1/4"	67	157'-8 3/4"
18	42'-4 3/4"	68	159'-2 3/4"
19	44'-8 3/4"	69	162'-5 1/4"
20	47'-1"	70	164'-9 1/2"
21	49'-5 1/4"	71	167'-1 3/4"
22	51'-9 3/4"	72	169'-6"
23	54'-4"	73	171'-10 1/4"
24	56'-8"	74	174'-2 1/4"
25	58'-10 1/4"	75	176'-6 3/4"
26	61'-2 1/2"	76	178'-11"
27	63'-6 3/4"	77	181'-3 1/4"
28	65'-11 1/4"	78	183'-7 1/4"
29	68'-5 1/4"	79	185'-11 3/4"
30	70'-9 1/2"	80	188'-4"
31	72'-13 3/4"	81	190'-8 1/4"
32	75'-11 3/4"	82	193'-2 3/4"
33	77'-8 1/4"	83	195'-6 3/4"
34	80'-0 3/4"	84	197'-10 3/4"
35	82'-4 3/4"	85	200'-1 1/4"
36	84'-9"	86	202'-5 1/4"
37	87'-1 1/4"	87	204'-9 3/4"
38	89'-5 1/4"	88	207'-3 3/4"
39	91'-9 3/4"	89	209'-7 3/4"
40	94'-2"	90	211'-10 3/4"
41	96'-6 1/4"	91	214'-2 3/4"
42	98'-10 1/4"	92	216'-6 3/4"
43	101'-4 3/4"	93	218'-10 3/4"
44	103'-8 3/4"	94	221'-4 3/4"
45	105'-12 3/4"	95	223'-8 3/4"
46	108'-6 3/4"	96	226'-2 3/4"
47	111'-0 3/4"	97	228'-6 3/4"
48	113'-4 3/4"	98	230'-10 3/4"
49	115'-8 3/4"	99	233'-4 3/4"
50	117'-12 3/4"	100	235'-8 3/4"



STANDARD SHEET OF CORRUGATED WIRE GLASS



TYPICAL COVER CAP JOINT

NOTES

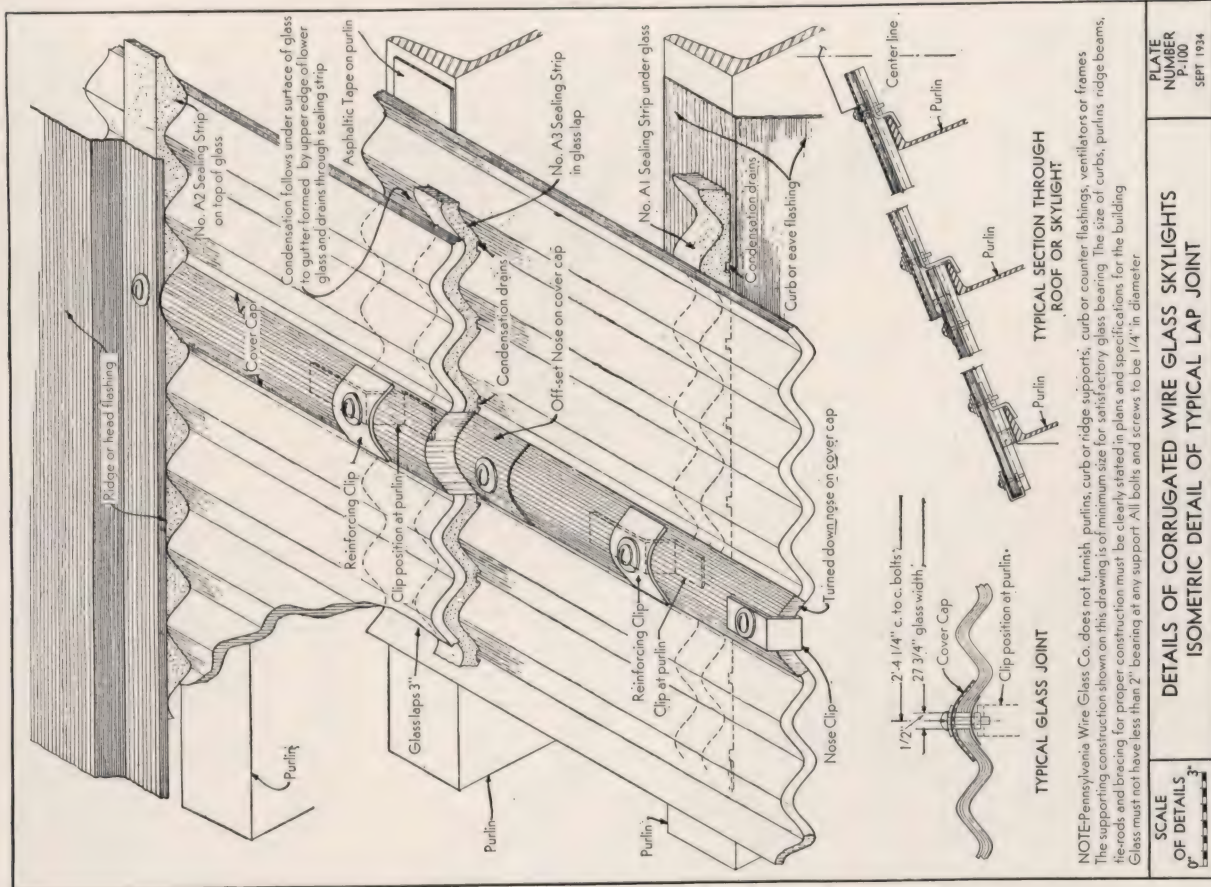
Standard width glass (27 3/4 in.) should be used wherever possible on account of ease in setting and because cut sizes are more difficult to obtain in case of breakage.

When glass must be cut in widths narrower than 27 3/4 in. it can only be supplied in multiples of the full corrugation or 2 1/2 in.—viz., 25 1/4 in., 22 3/4 in., 20 1/4 in. and 17 3/4 in.

In arranging corrugated wire glass sheets to suit a given opening it is often necessary to cut out more than one 2 1/2-in. corrugation. Then it is advisable to divide the cutting among several sheets rather than cut all from one sheet.

Glass more than 27 3/4 in. wide cannot be supplied.

The lengths of the sheets depend upon the conditions under which the glass is used. The conditions governing are shown in the Typical Detail Sheets for different types of skylights and glass roof construction.

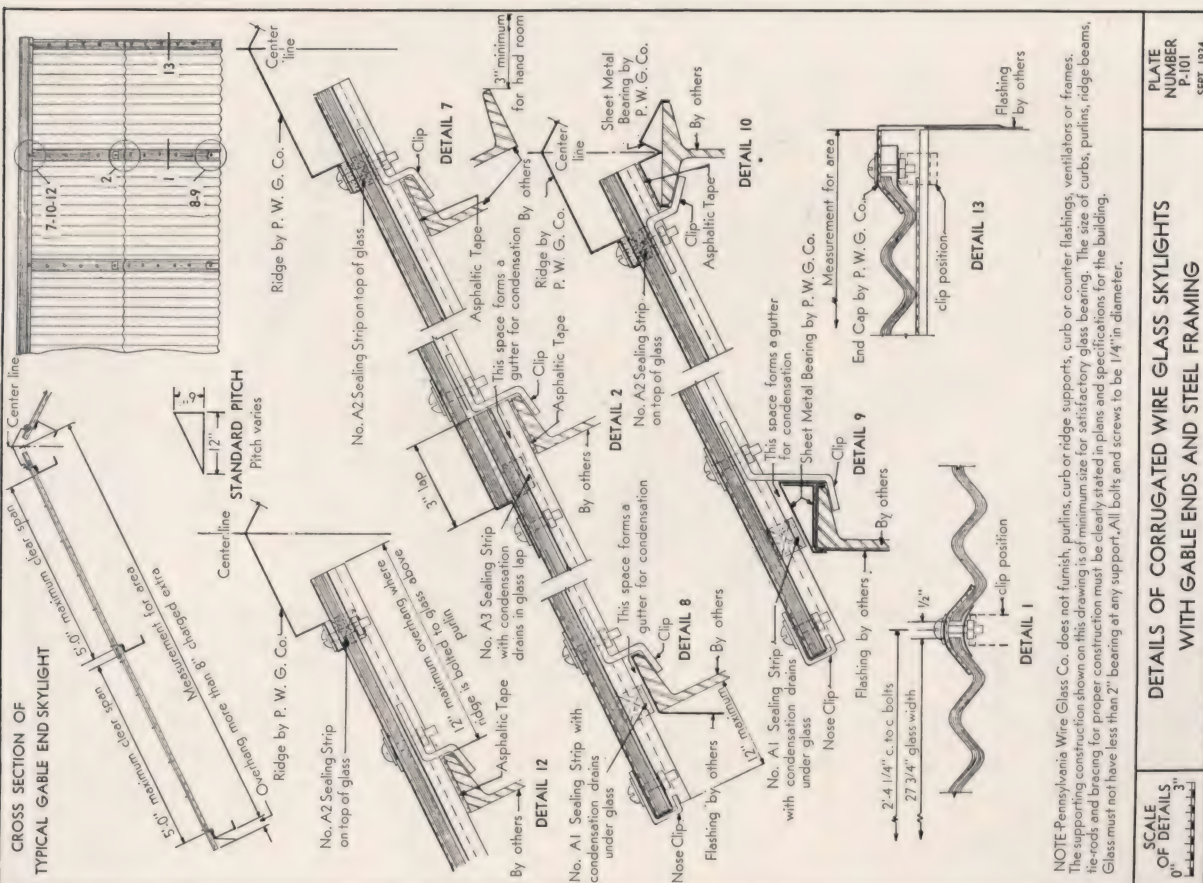


NOTE—Pennsylvania Wire Glass Co. does not furnish purlins, curb or ridge supports, curb or counter flashings, ventilators or frames. The supporting construction shown on this drawing is of minimum size for satisfactory glass bearing. The size of curbs, purlins, ridge beams, tie-rods and bracing for proper construction must be clearly stated in plans and specifications for the building. Glass must not have less than 2" bearing at any support. All bolts and screws to be 1/4" in diameter.

SCALE OF DETAILS 0" 3"

DETAILS OF CORRUGATED WIRE GLASS SKYLIGHTS ISOMETRIC DETAIL OF TYPICAL LAP JOINT

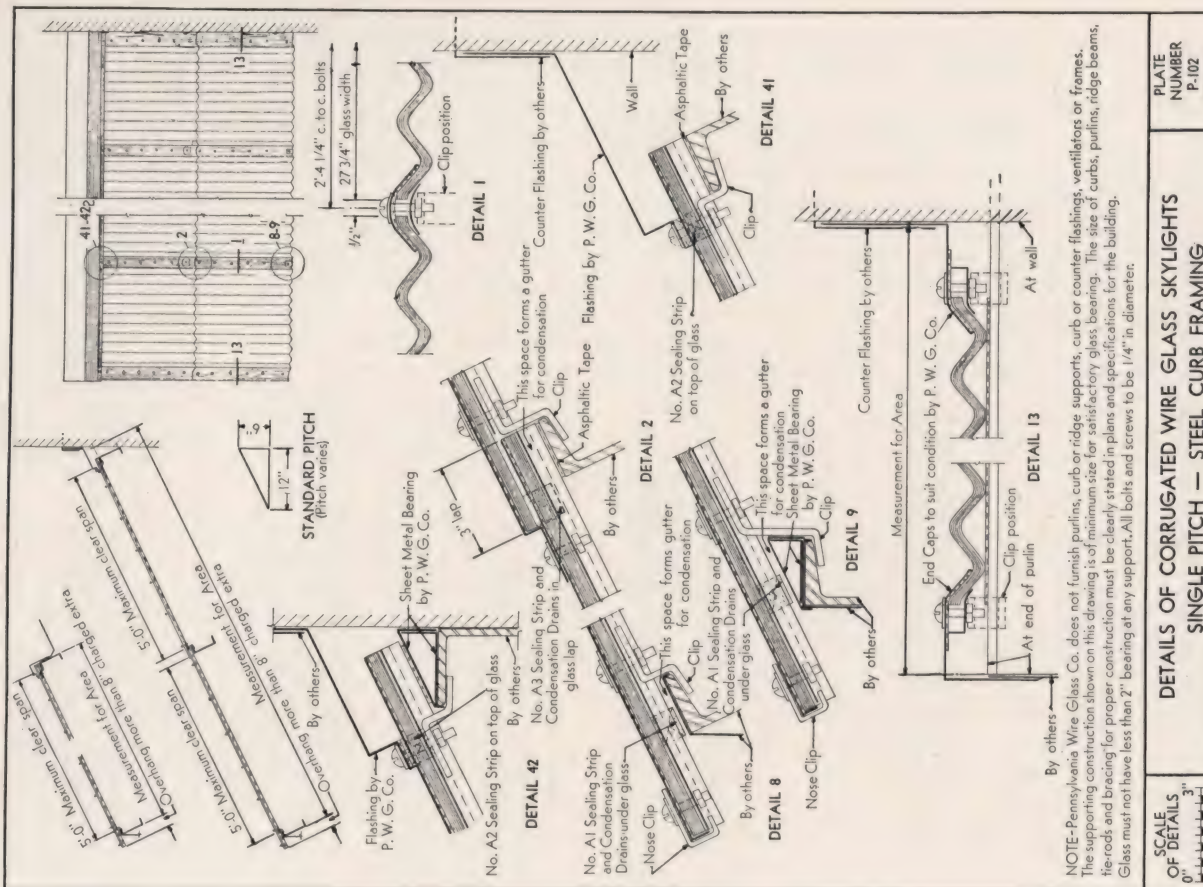
PLATE NUMBER P.100 SEPT 1934



NOTE: Pennsylvania Wire Glass Co. does not furnish putlins, curb or ridge supports, curb or counter flashings, ventilators or frames. The supporting construction shown on this drawing is of minimum size for satisfactory glass bearing. The size of curbs, putlins, ridge beams, tie-rods and bracing for proper construction must be clearly stated in plans and specifications for the building. Glass must not have less than 2" bearing of any support. All bolts and screws to be 1/4" in diameter.

SCALE
OF DETAILS
1" = 3"

PLATE
NUMBER
P-101
SEPT. 1934



NOTE—Pennsylvania Wire Glass Co. does not furnish purlins, curb or ridge supports, curb or counter flashings, ventilators or frames. The supporting construction shown on this drawing is of minimum size for satisfactory glass bearing. The size of curb, purlins, ridge beams, girders and bracing for proper construction must be clearly stated in plans and specifications for the building. Glass must not have less than 2" bearing at any support. All bolts and screws to be 1/4" in diameter.

SCALE
OF DETAILS
" 3"

PLATE
NUMBER
P-102
SEPT. 1934

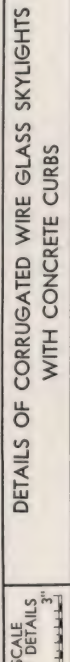


PLATE
NUMBER
P-103
SEPT. 1934

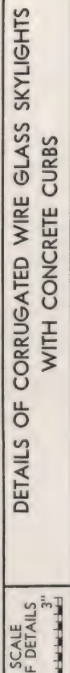
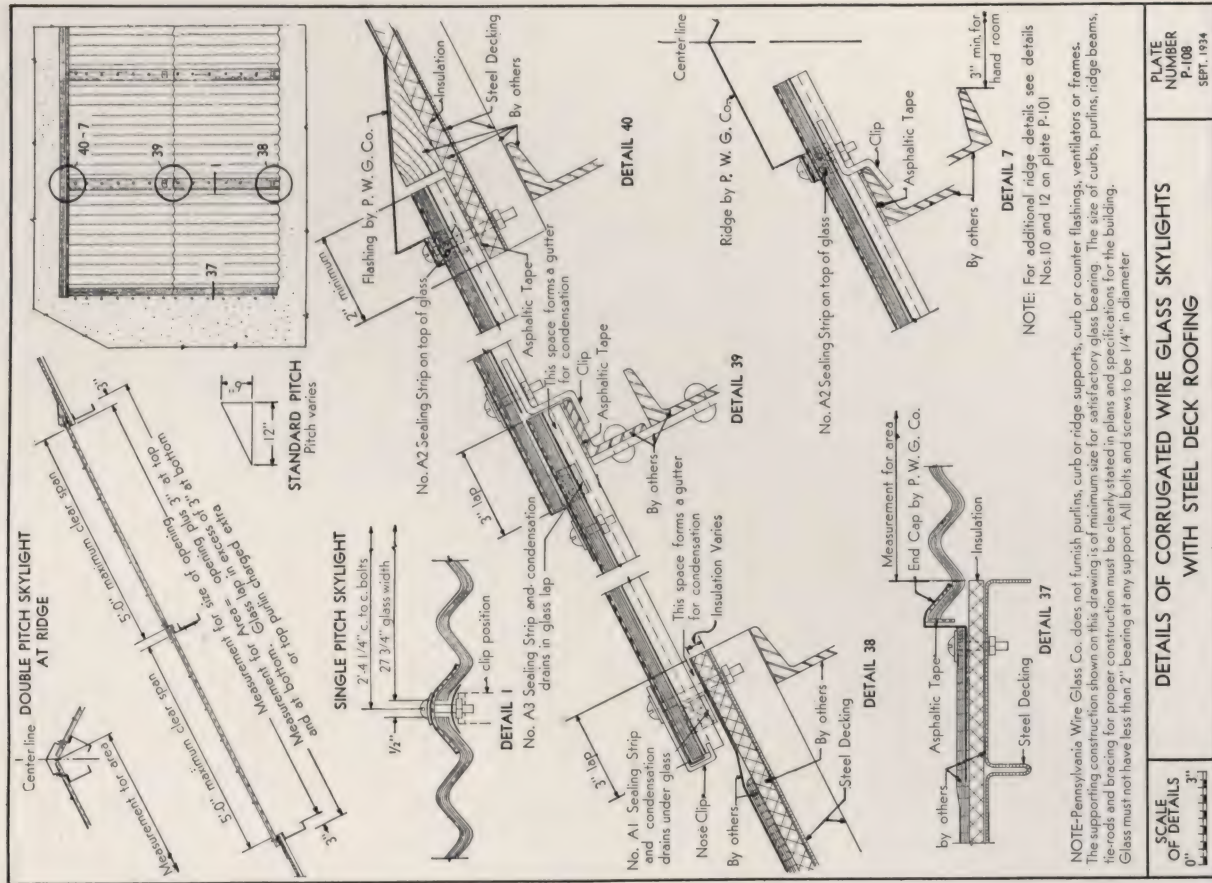


PLATE
NUMBER
P-104
SEPT. 1934

NOTE: Pennsylvania Wire Glass Co. does not furnish purlins, curb or ridge supports, curb or counter flashings, ventilators or frames. The supporting construction shown on this drawing is of minimum size for satisfactory glass bearing. The size of curbs, purlins, ridge beams, wire rods and bracing for proper construction must be clearly stated in plans and specifications for the building. Glass must not have less than 2" bearing at any support. All bolts and screws to be 1/4" in diameter.

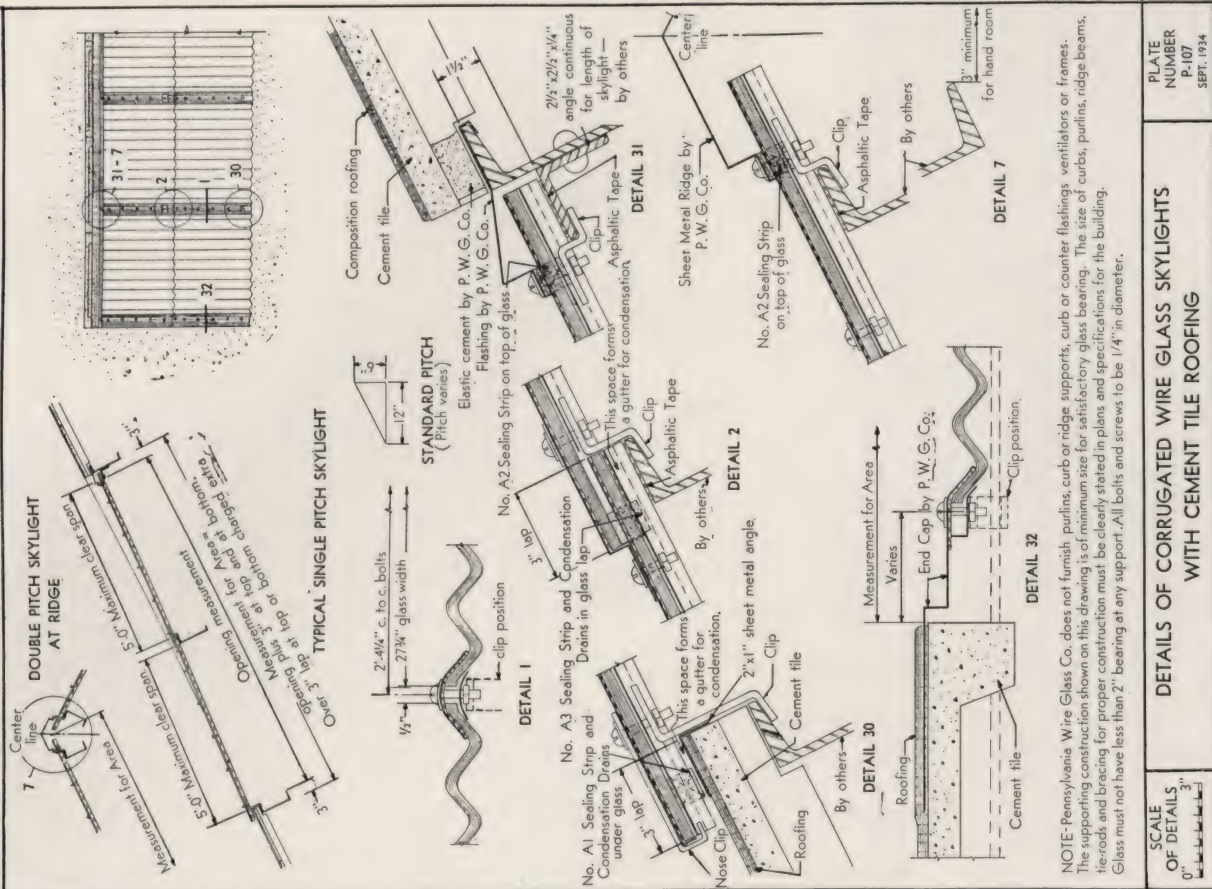
NOTE—Pennyweld Wire Glass Co. does not furnish, put in, curb or ridge supports, curb or counter flashings, ventilators or frames. The supporting construction shown on this drawing is of minimum size for satisfactory glass bearing. The size of curbs, put in, ridge beams, tie rods and bracing for proper construction must be clearly stated in plans and specifications for the building. Glass must not have less than 2" bearing at any support. All bolts and screws to be 1/4" in diameter.



DETAILS OF CORRUGATED WIRE GLASS SKYLIGHTS WITH STEEL DECK ROOFING

SCALE OF DETAILS
0" 3"

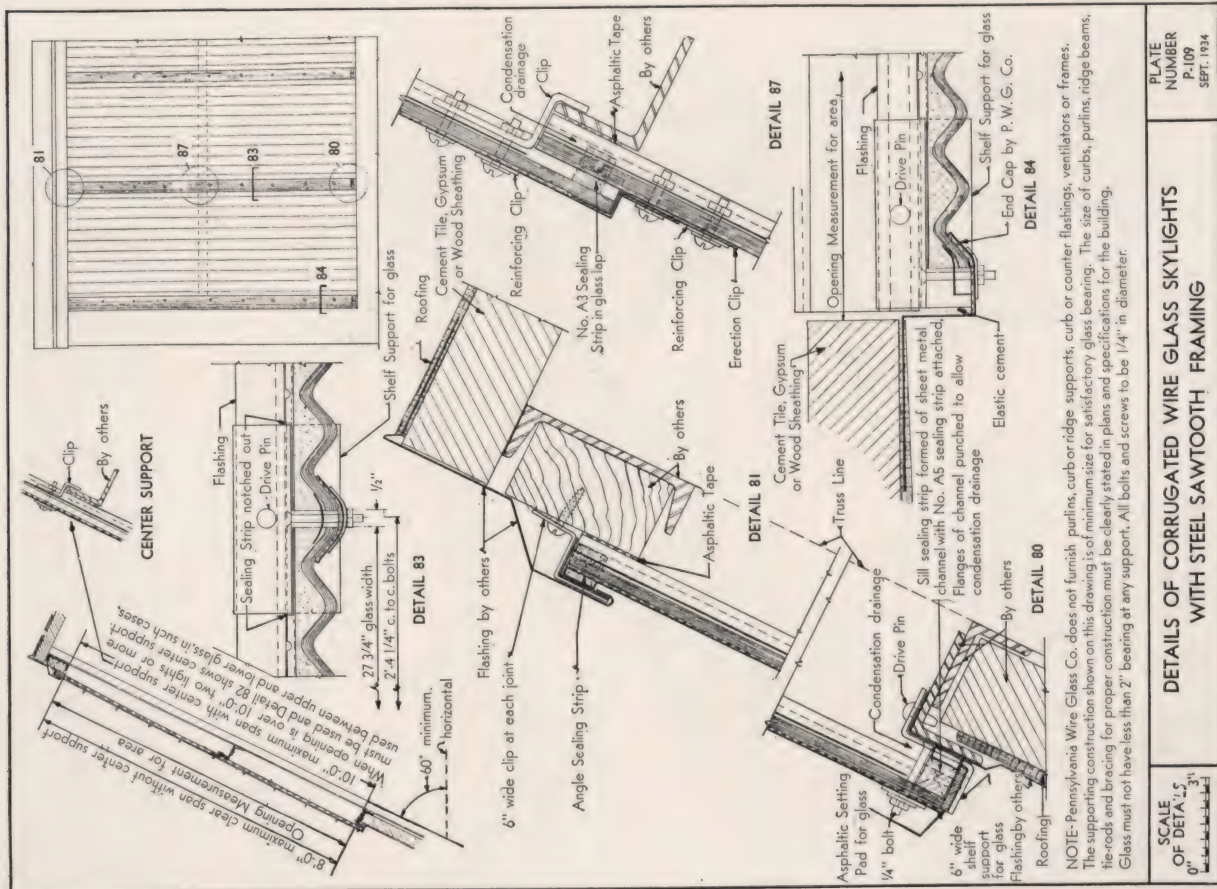
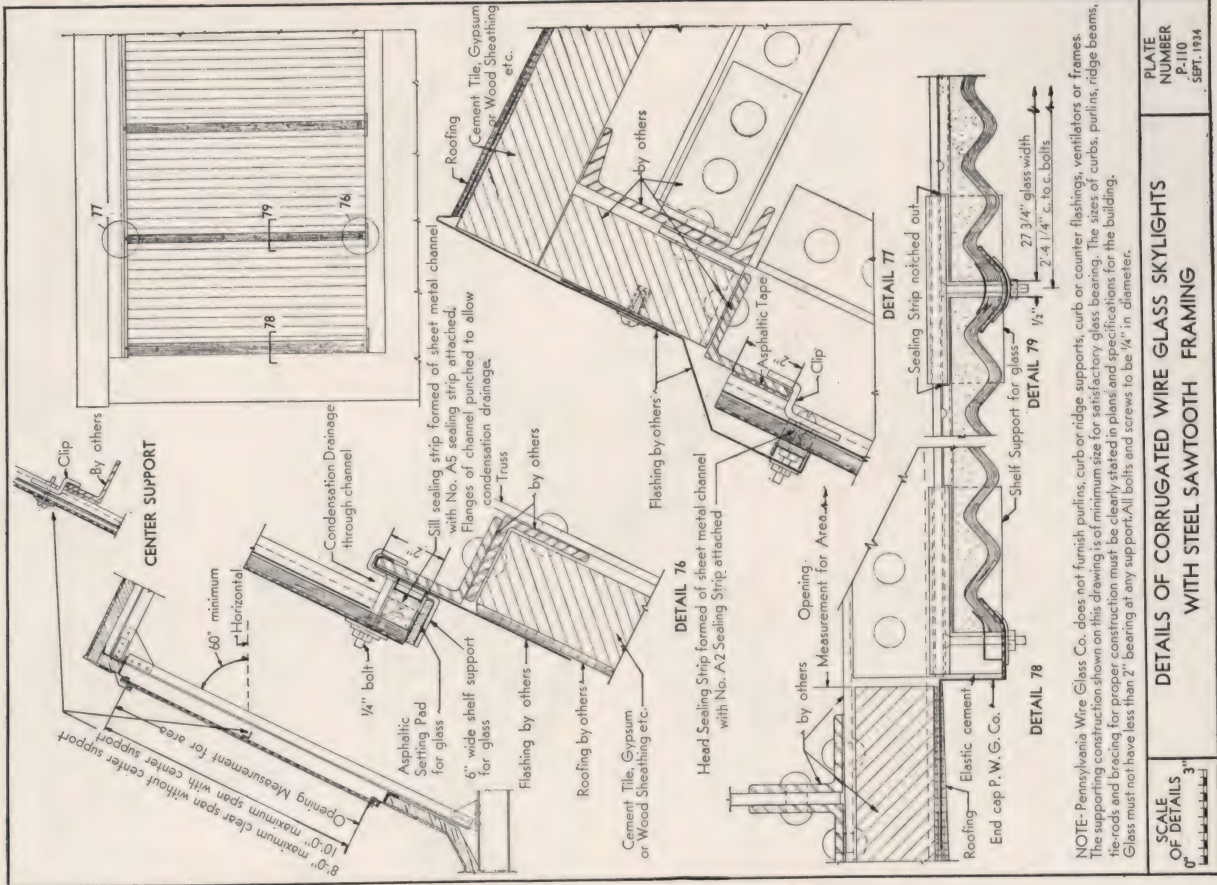
PLATE NUMBER
P-108
SEPT. 1934

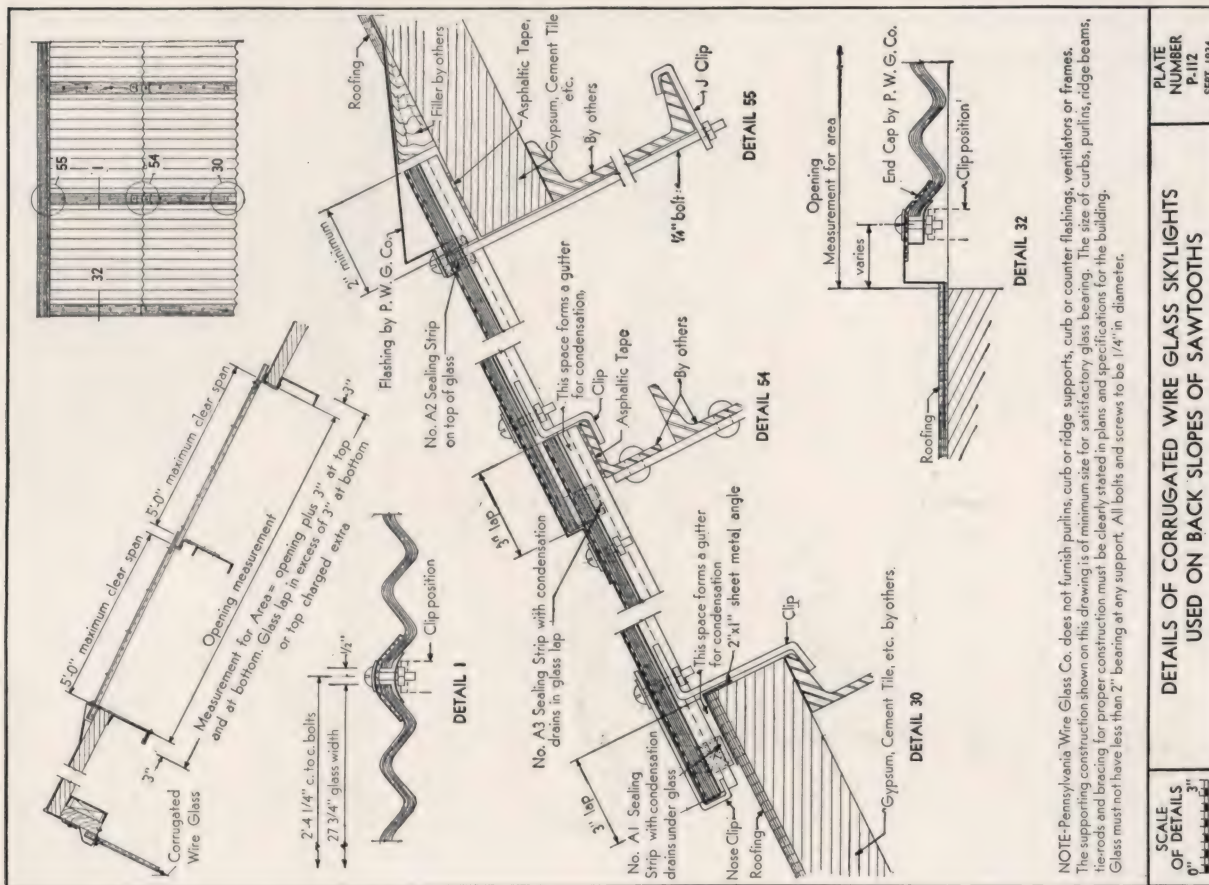


DETAILS OF CORRUGATED WIRE GLASS SKYLIGHTS WITH CEMENT TILE ROOFING

SCALE OF DETAILS
0" 3"

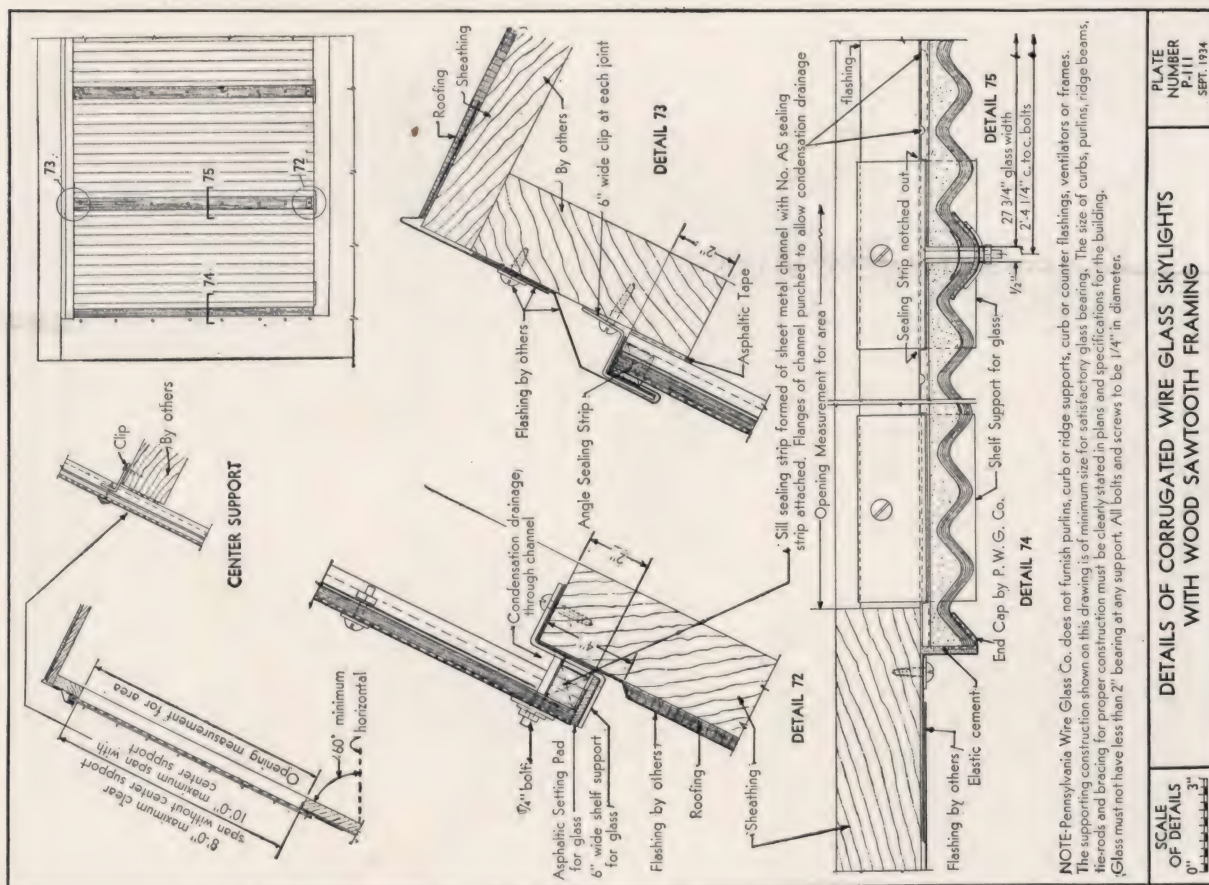
PLATE NUMBER
P-107
SEPT. 1934





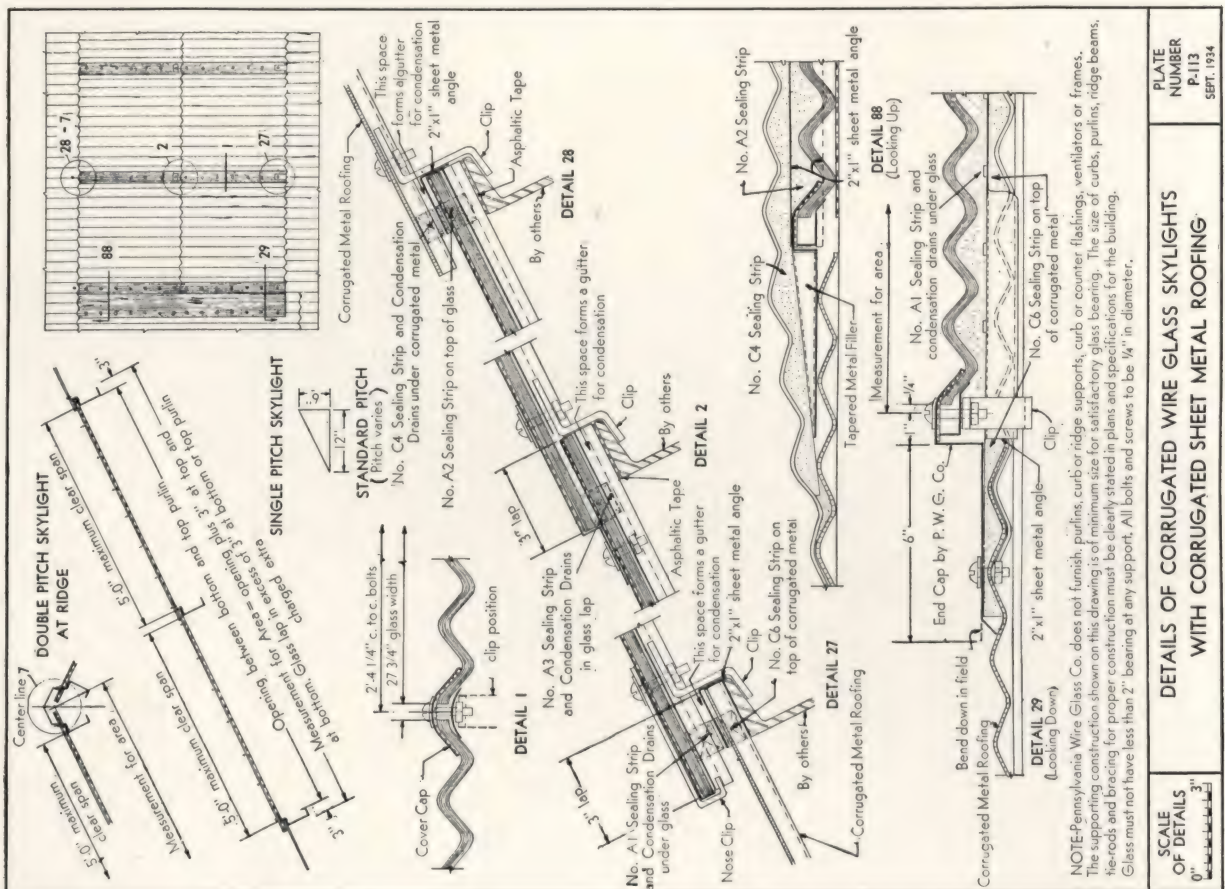
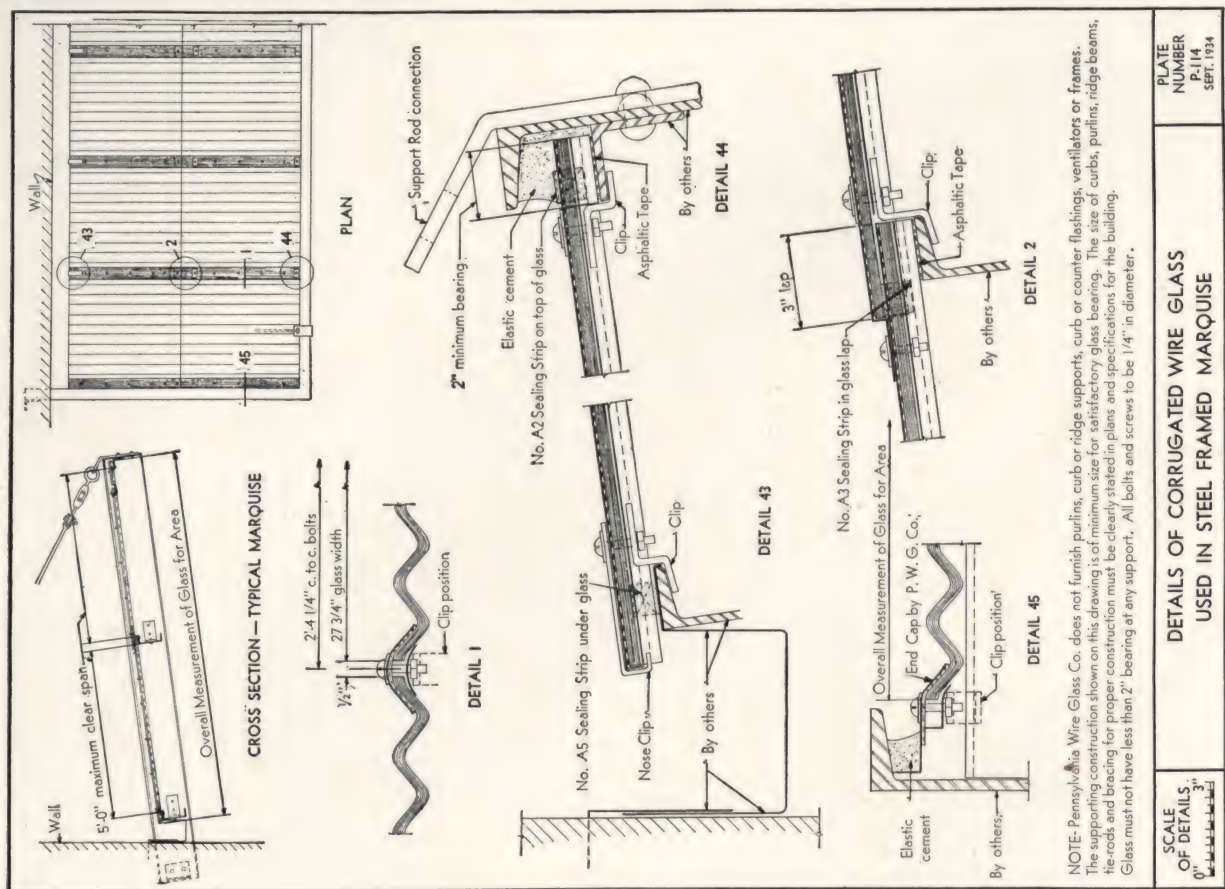
NOTE: Pennsylvania Wire Glass Co. does not furnish purlins, curb or ridge supports, curb or counter flashings, ventilators or frames. The supporting construction shown on this drawing is of minimum size for satisfactory glass bearing. The size of curbs, purlins, ridge beams, tie-rods and bracing for proper construction must be clearly stated in plans and specifications for the building. Glass must not have less than 2" bearing at any support. All bolts and screws to be 1/4" in diameter.

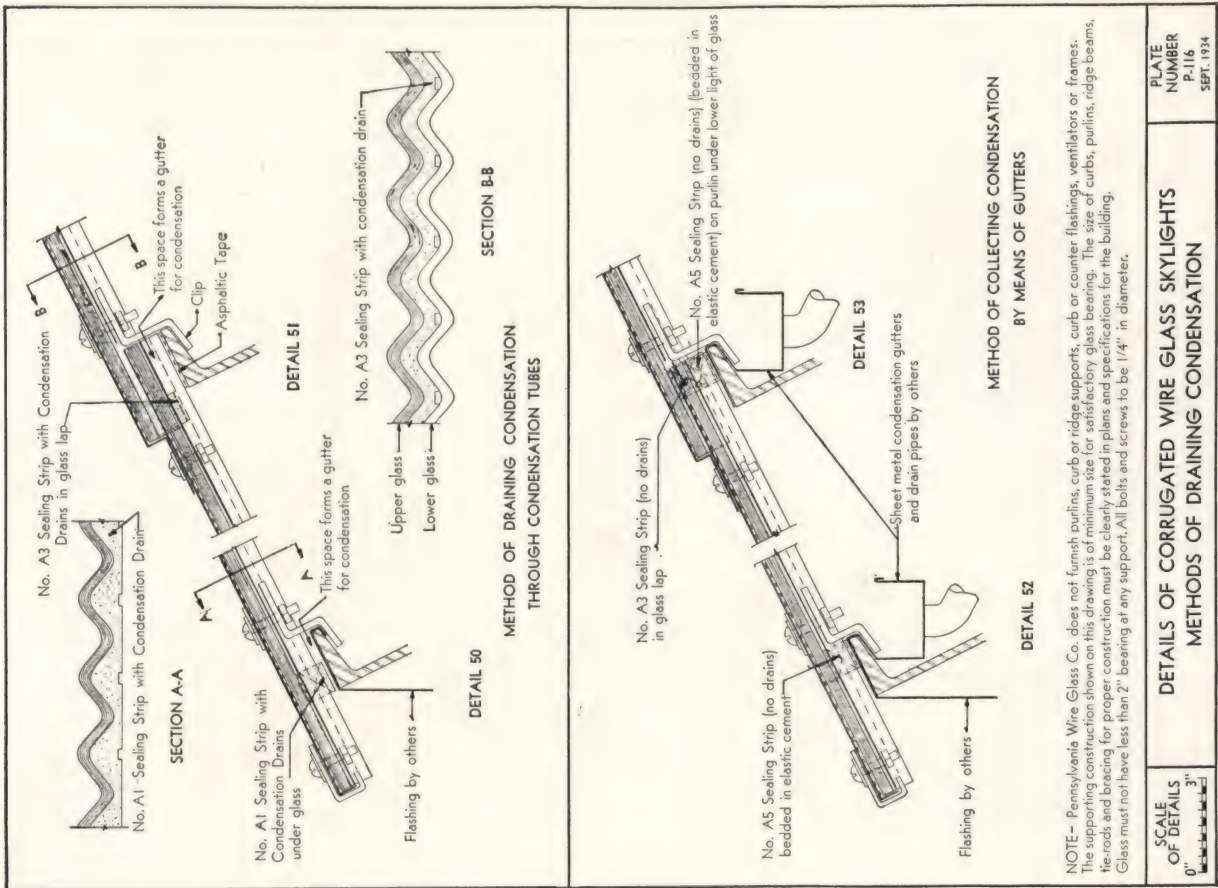
SCALE OF DETAILS 0" = 3"	DETAILS OF CORRUGATED WIRE GLASS SKYLIGHTS USED ON BACK SLOPES OF SAWTOOTHS	PLATE NUMBER P-112 SEPT. 1934
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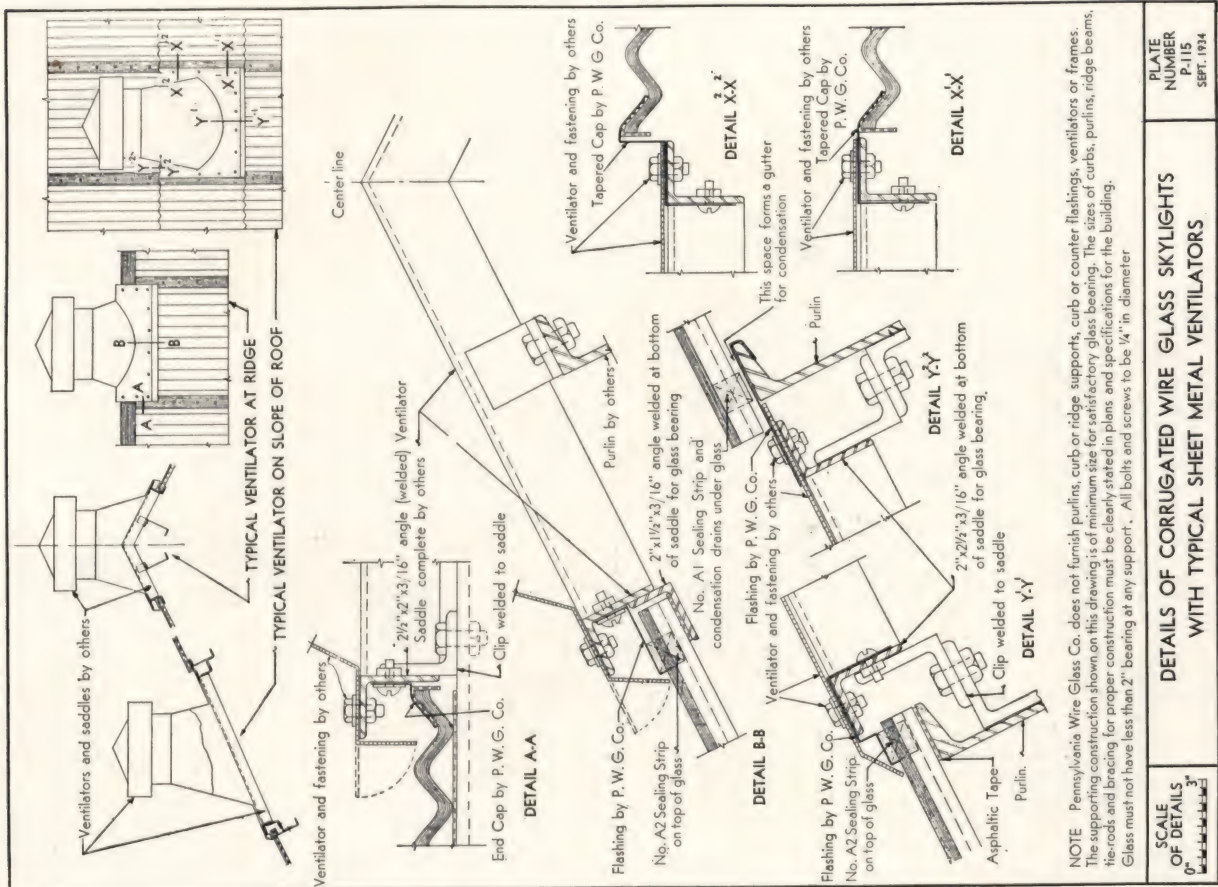
NOTE: Pennsylvania Wire Glass Co. does not furnish purlins, curb or ridge supports, curb or counter flashings, ventilators or frames. The supporting construction shown on this drawing is of minimum size for satisfactory glass bearing. The size of curbs, purlins, ridge beams, tie-rods and bracing for proper construction must be clearly stated in plans and specifications for the building. Glass must not have less than 2" bearing at any support. All bolts and screws to be 1/4" in diameter.

SCALE OF DETAILS 0" = 3"	DETAILS OF CORRUGATED WIRE GLASS SKYLIGHTS WITH WOOD SAWTOOTH FRAMING	PLATE NUMBER P-111 SEPT. 1934
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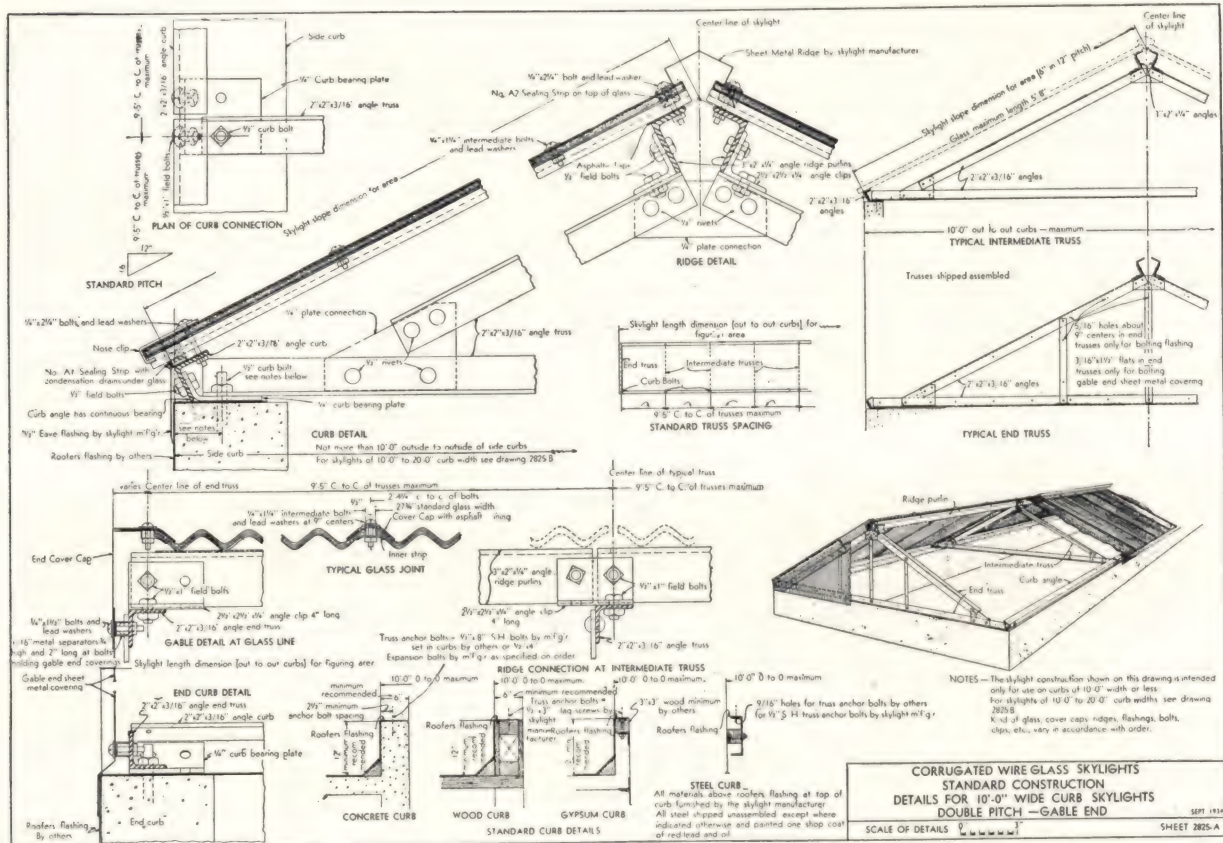
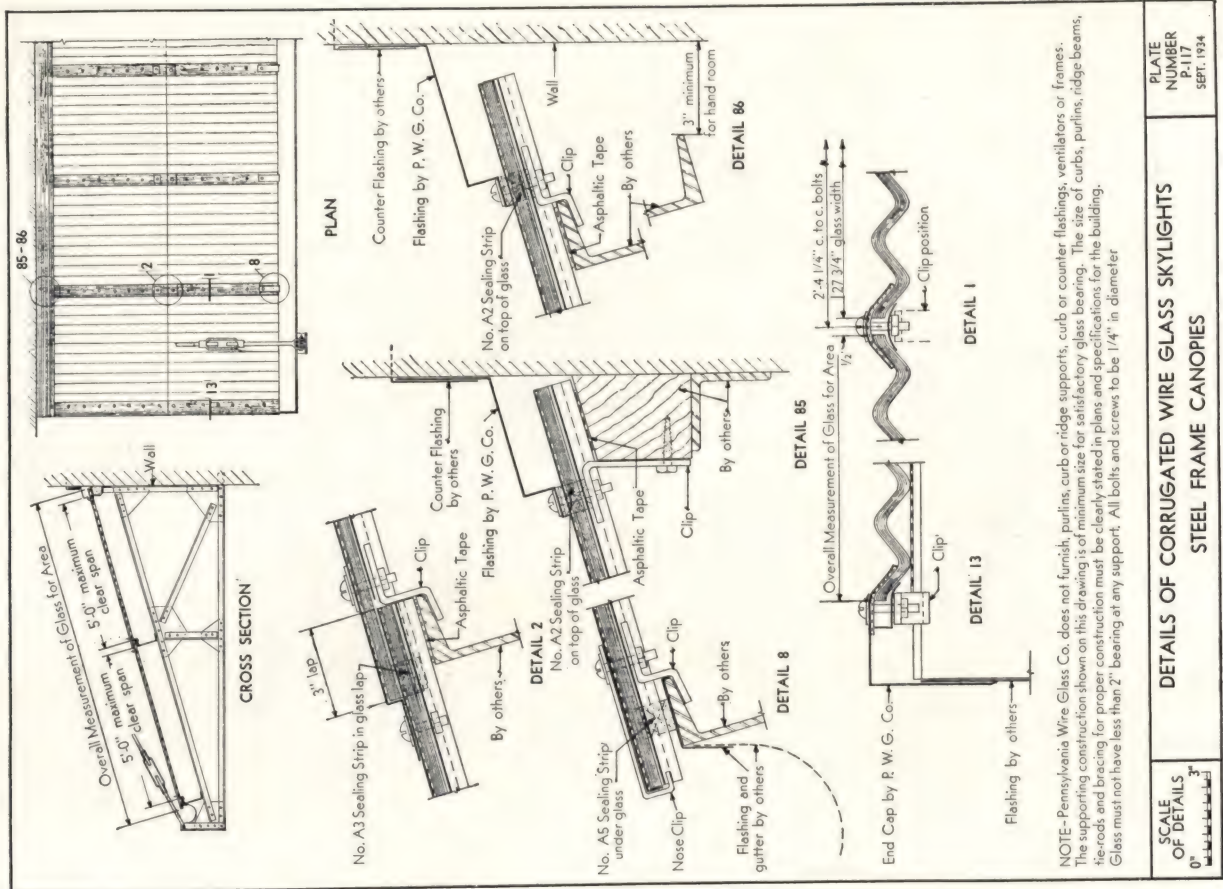


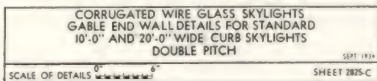
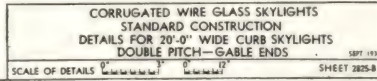


SCALE OF DETAILS 0" = 3"	DETAILS OF CORRUGATED WIRE GLASS SKYLIGHTS METHODS OF DRAINING CONDENSATION	PLATE NUMBER P-116 SEPT. 1934
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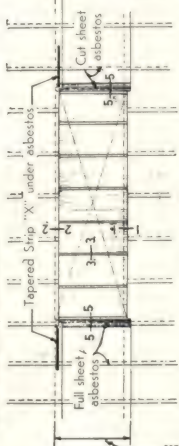


SCALE OF DETAILS 0" = 3"	DETAILS OF CORRUGATED WIRE GLASS SKYLIGHTS WITH TYPICAL SHEET METAL VENTILATORS	PLATE NUMBER P-115 SEPT. 1934
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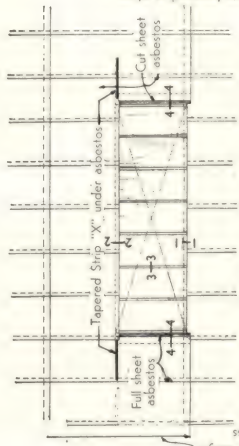




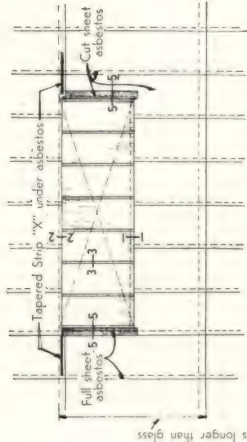
TOP ROW—Shows skylights starting at edge of full sheet of asbestos when skylights are placed at random and have no definite location or relation to trusses, bay centers, etc.



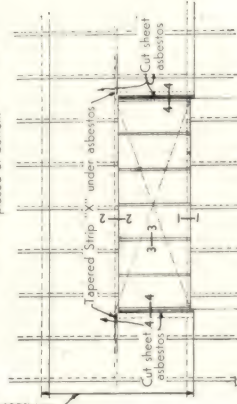
SKYLIGHT TYPE "R"
Asbestos sheets at end of skylight same length as glass



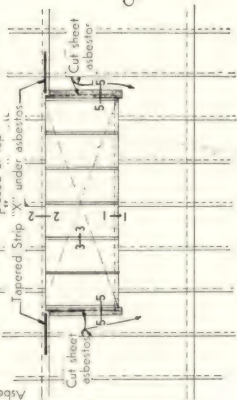
SKYLIGHT TYPE "S"
Asbestos sheets longer than glass and placed at bottom



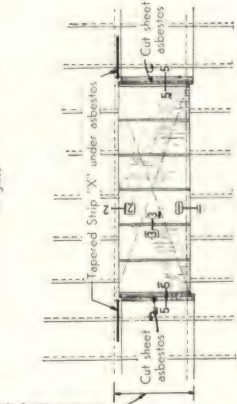
SKYLIGHT TYPE "T"
Asbestos sheets longer than glass and placed at top



SKYLIGHT TYPE "X"
Asbestos sheets longer than glass and placed at top

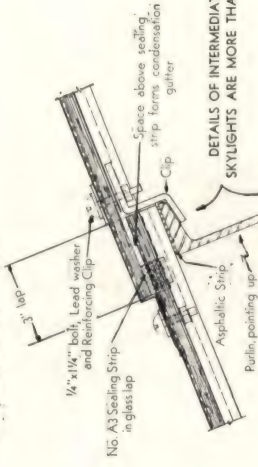


SKYLIGHT TYPE "Y"
Asbestos sheets longer than glass and placed at top

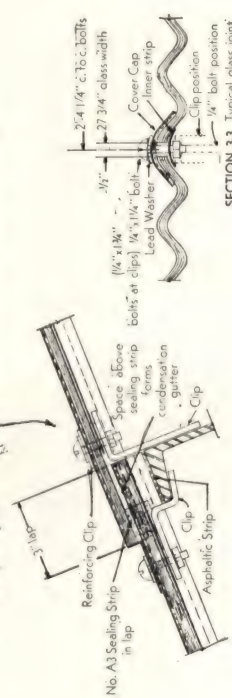


SKYLIGHT TYPE "Z"
Asbestos sheets longer than glass and placed at top

BOTTOM ROW—Shows skylights set in openings cut in asbestos with cut sheets at each end as often happens when skylights must be located definitely with relation to trusses, etc.



DETAILS OF INTERMEDIATE PURLINS WHERE SKYLIGHTS ARE MORE THAN ONE LIGHT HIGH



SECTION 33 Typical glass joint

NOTE
Length (measure for area) of Types R, S and T skylights varies in multiples of 2' 4 1/4", which is the glass joint spacing for standard 27 3/4" wide glass

NOTE
The soft metal wing is made 3" longer than hard metal cap at both bottom and top of skylight

The end cap connecting glass and asbestos is formed of two parts, viz:
(1) A hard metal cap and inner strip which hold the glass firmly in place and
(2) A soft metal wing which is formed over the asbestos, trimmed to fit and bolted every 9 inches

NOTE: Clip and bolt cap to glass before forming soft wing to asbestos
Hard Metal End Cap and Inner Strip by P. W. G. Co.

NOTE
The maximum and minimum spacing of asbestos with relation to the end of skylight (glass) is indicated. These distances apply when the asbestos sheet is cut so as to end either "up" or "down" and permit proper placing of end cover caps

1 full corr. of asbestos plus 2" = maximum

2" minimum

Clip position at end cap

1/16" thick continuous metal bolt strip

1/4" x 1/4" bolt when used at end cap

SECTION 44 Skylight "S"

Left side as shown—Right side opposite

Asbestos sheet of any pitch. Sheet may end with edge "up" or "down"

These sections illustrate typical conditions. For other details and special conditions see the following

SECTION 55 Skylights "X" and "Y"

Left side as shown—Right side opposite

1/4" bolt when used at end cap

NOTE:

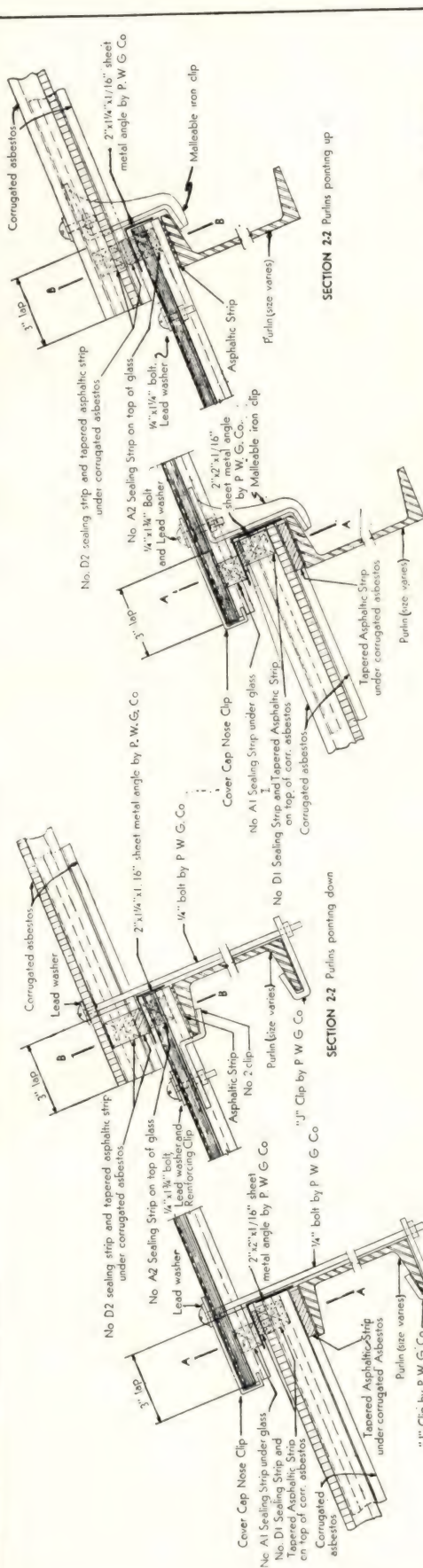
This is a typical plan and detail sheet showing corrugated wire glass with any make of corrugated asbestos roofing. Since the pitch of different asbestos sheets varies, certain details of erection also vary (see list of aerial drawings at left)

DETAIL DRAWINGS
2W" pitch asbestos—drawing No. 2700A
4.2" pitch asbestos—drawing No. 2700B
7" pitch asbestos—drawing No. 2700C

CORRUGATED WIRE GLASS USED WITH CORRUGATED ASBESTOS ROOFING

SCALE OF DETAILS
SEPT. 1934
SHEET 2700

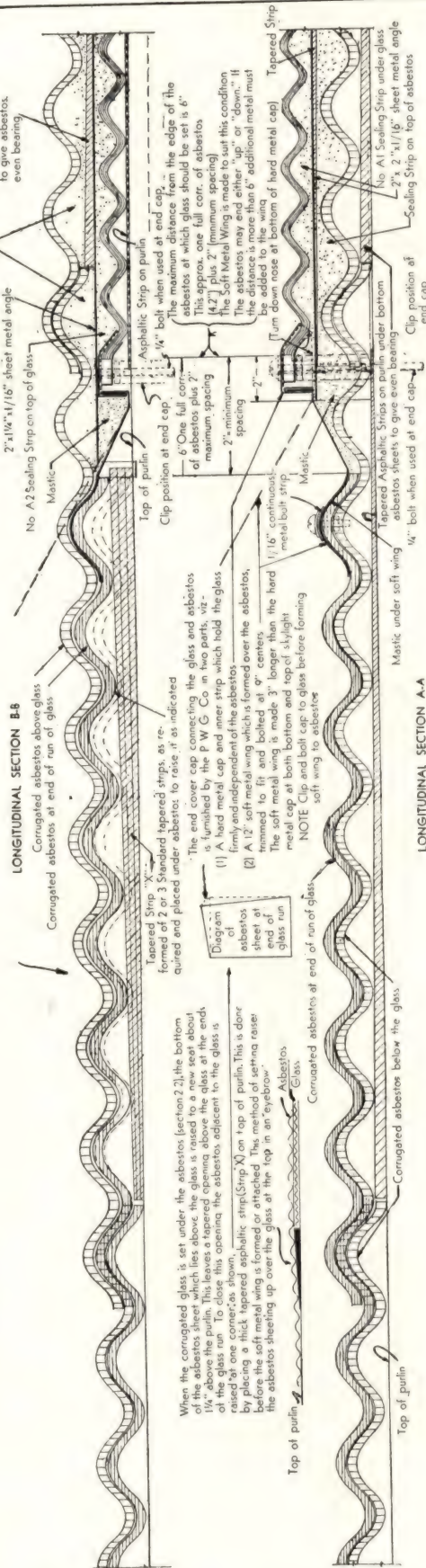




SECTION 1-1 Purlins pointing down

SECTION 2-2 Purlins pointing up

SECTION 2-3 Purlins pointing down



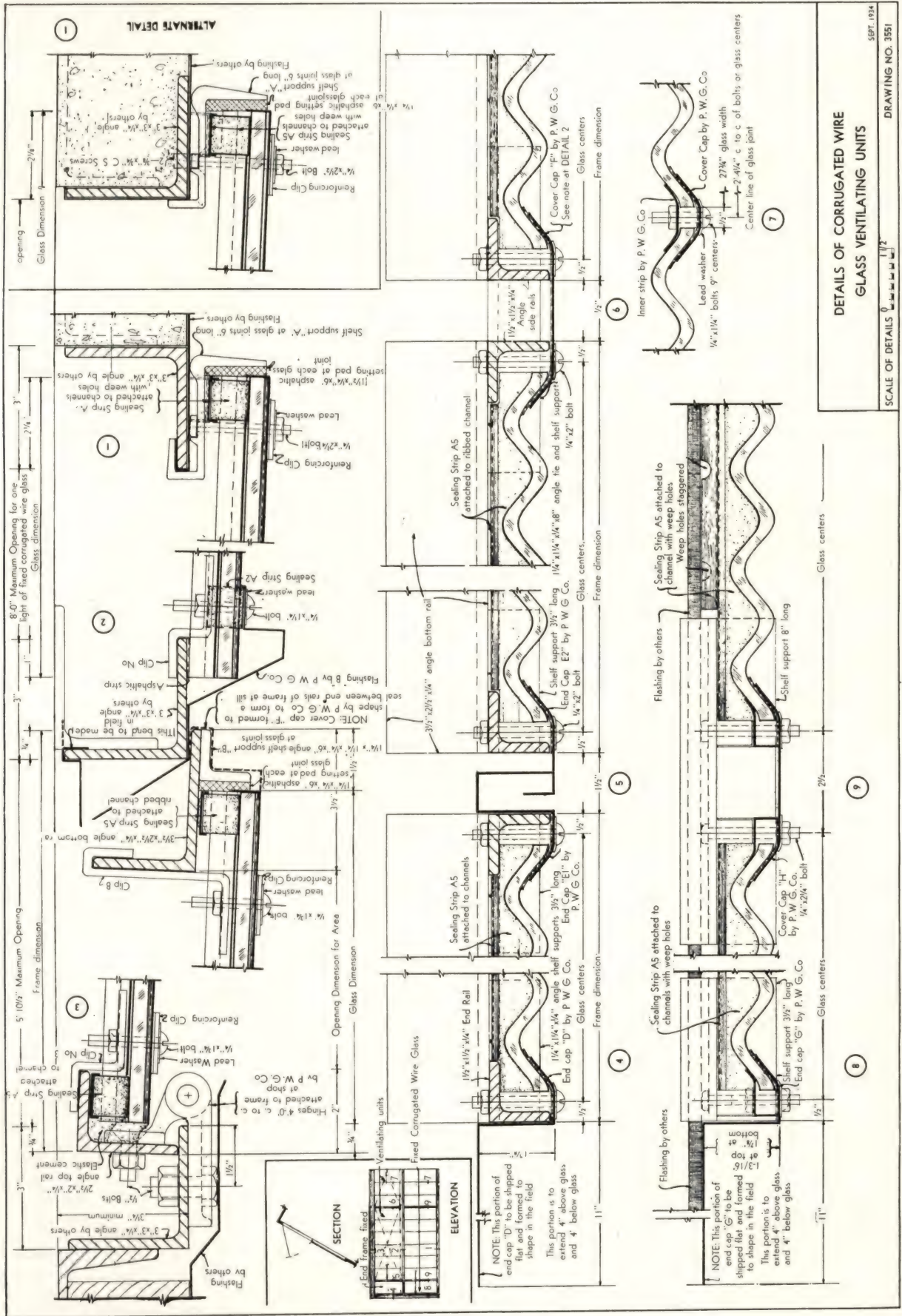
LONGITUDINAL SECTION B-B

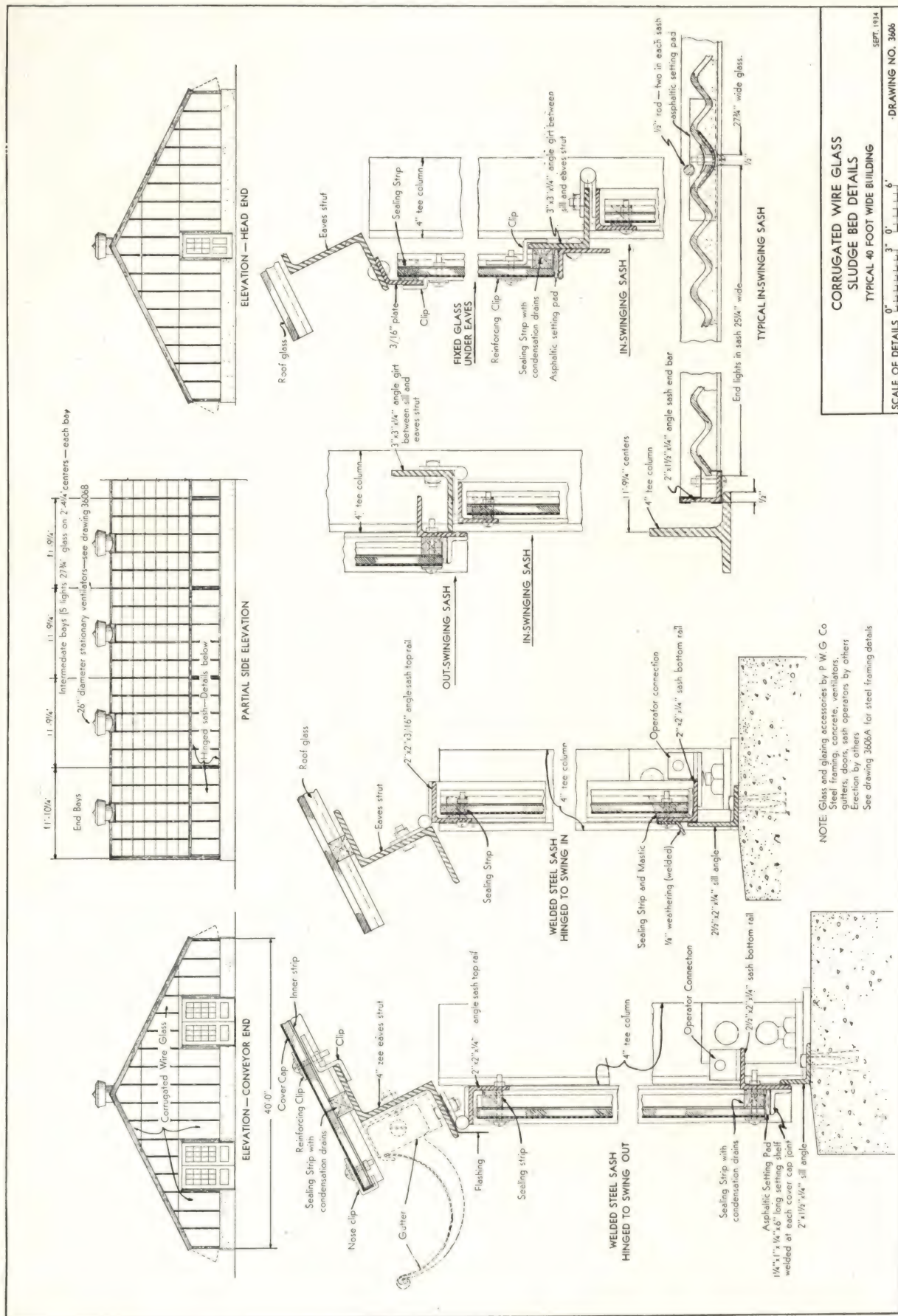
NOTE
The conditions shown on this drawing have been assumed at random. No attempt has been made to show any ideal set of conditions.

This drawing is to be used in conjunction with drawing No. 2700

CORRUGATED WIRE GLASS
USED WITH 4.2" PITCH
CORRUGATED ASBESTOS

SCALE OF DETAILS 0" = 3"
SEPT. 1934
SHEET 2700B





CORRUGATED WIRE GLASS
SLUDGE BED DETAILS
TYPICAL 40 FOOT WIDE BUILDING

SEPT. 1934
DRAWING NO. 3606



SCALE OF DETAILS 0" 3" 0" 3" 0" 12"



INDOOR TENNIS COURT OF MRS. H. E. TALBOT
DAYTON, OHIO
C. W. G. Roof



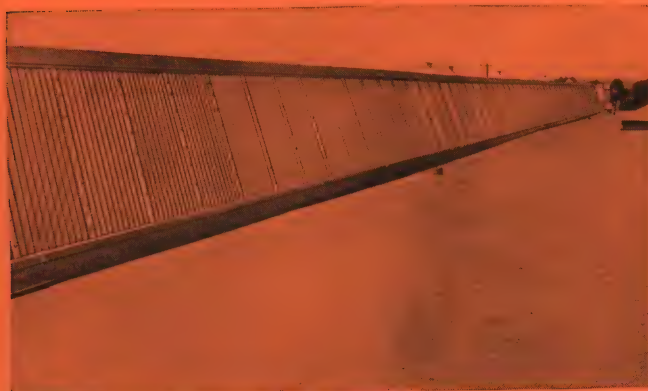
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.
Street Between Buildings Roofed Over



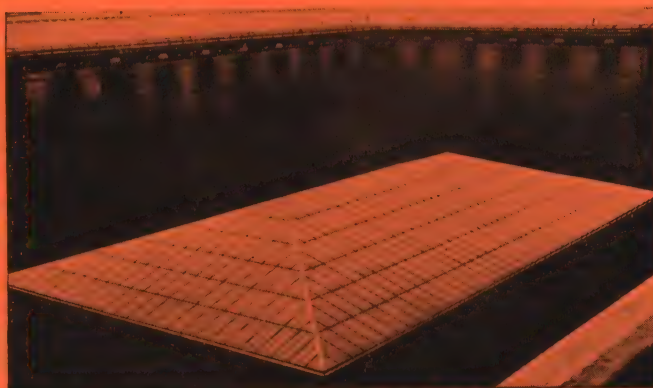
OLIVER IRON AND STEEL CO.
PITTSBURGH, PA.
C. W. G. Used with Corrugated Sheet Roofing



CHESAPEAKE AND OHIO R. R. SHOPS
RUSSELL, KY.
68,000 sq. ft. Curb Skylights



LELAND ELECTRIC CO.
DAYTON, OHIO
20,000 sq. ft. Sawtooth Skylights



POST OFFICE, 33rd St. and Eighth Ave.
NEW YORK CITY
7,100 sq. ft. Hip Skylight



FORD MOTOR CO.
LINCOLN DIVISION—DETROIT, MICH.
C. W. G. on Back Slopes of Sawtooths



LIBBEY-OWENS SHEET GLASS CO.
TOLEDO, OHIO
C. W. G. Sawtooth Skylights

H. H. ROBERTSON COMPANY

Robertson World-Wide Building System

PITTSBURGH, PA.

FACTORIES: AMBRIDGE, PA.; SARNIA, ONT., CANADA; ELLESMERE PORT, CHESHIRE, ENG.

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ALLEN TOWN, PA., H. N. Crowder, 446 Union St.
ATLANTA, GA., J. M. Van Harlingen, 609 Forsyth Bldg.
BALTIMORE, MD., H. H. Robertson Company, 1635 Baltimore Trust Bldg.
BIRMINGHAM, ALA., McVoy-Hausman Co., 2019 Sixth Ave., No.
BOSTON, MASS., H. H. Robertson Company, Consolidated Gas Bldg.
BUFFALO, N. Y., H. H. Robertson Company, 602 Jackson Bldg.
BUTTE, MONT., Archie W. Adams, 618 Metals Bank Bldg.
CHARLESTON, W. VA., Fireproof Products Co., 214 Professional Bldg.
CHARLOTTE, N. C., Edwin C. Boyette, Jr., 135 Brevard Court
CHICAGO, ILL., H. H. Robertson Company, 360 No. Michigan Ave.
CLEVELAND, OHIO, H. H. Robertson Company, 1526 Hanna Bldg.
DENVER, COLO., O. H. Davidson, 1921 E. Colfax Ave.
DETROIT, MICH., H. H. Robertson Company, 529 New Center Bldg.
EASTON, PA., H. N. Crowder, 103 No. Fourth St.
EL PASO, TEX., H. W. Foester, Inc., 1223 Mills Bldg.
GREENVILLE, S. C., James McCabe, 24 Mills Ave.
HOUGHTON, MICH., C. H. Cooper, Dee Bldg.
HOUSTON, TEX., R. B. Archer, 1001 W. Drew Ave.
JACKSONVILLE, FLA., H. H. Robertson Company, P. O. Box 4523
KNOXVILLE, TENN., R. G. Jeffries, 225 Daylight Bldg.
LITTLE ROCK, ARK., Wherry & Company, 115 Center St.
WASHINGTON, D. C., J. R. Nichols, 230 Rhode Island Ave.

LOS ANGELES, CALIF., H. H. Robertson Company, 816 W. Fifth St.
MEMPHIS, TENN., Paul V. Harmon, 1663 Galloway Ave.
MILWAUKEE, WIS., H. H. Robertson Company, 1029 W. Wells St.
MINNEAPOLIS, MINN., Hauenstein & Burmeister, 614 Third Ave., So.
MUNCIE, IND., H. H. Robertson Company, 1501 So. Ebright St.
NEW HAVEN, CONN., W. F. Keenan, 30 Fairfield St., Westville
NEW ORLEANS, LA., E. B. Diboll, 1501 Canal Bank Bldg.
NEW YORK, N. Y., H. H. Robertson Company, 475 Fifth Ave.
PHILADELPHIA, PA., H. H. Robertson Company, 1307 Real Estate Trust Bldg.
PITTSBURGH, PA., H. H. Robertson Company, 2000 Grant Bldg.
PORTLAND, ORE., Mercer Steel Company, 838 N. W. 13th Ave.
RICHMOND, VA., R. M. Nolting, 210 Builders Exchange
ST. LOUIS, MO., H. H. Robertson Company, 1218 Olive St.
ST. PAUL, MINN., Hauenstein & Burmeister, 707 Builders Exchange
SALT LAKE CITY, UTAH, L. Brandenburger, 153 W. Second South St.
SAN FRANCISCO, CALIF., H. H. Robertson Company, 50 Hawthorne St.
SCRANTON, PA., F. H. Coffin, 210 Brooks Bldg.
SEATTLE, WASH., S. W. R. & Arthur A. Dally, 332 Pioneer Bldg.
SOUTH BOSTON, MASS., Northeastern Metal Co., 307 Dorchester Ave.
SYRACUSE, N. Y., F. J. Ludwick, 317 State Tower Bldg.
TULSA, OKLA., Murray R. Womble, 525 National Bank of Tulsa
Ave., N. E. (Rhode Island Gardens, Apartment 307)

For England: H. H. ROBERTSON COMPANY, MERSEY IRON WORKS, Ellesmere Port, Cheshire

For CANADA: H. H. ROBERTSON CO., LTD.—TORONTO (MAIN OFFICE), 611 Metropolitan Bldg.; MONTREAL OFFICE, 524 Confederation Bldg.

Products

ROBERTSON WEATHERPROOF SKYLIGHTS, SIDE-WALL SASH, MONITOR SASH and SPECIAL SASH.

For Robertson Protected Metal (RPM), Protected Metal V-Beam Sheets, Ventilators, Floor Wiring System, and Robertson Cellular Steel for floors, walls and roofs, see File Index.



Patents

Robertson Skylights and Sash are protected by United States Patents No. 1,243,020, October 16, 1917, and No. 1,666,764, April 17, 1928; also protected by other patents in the United States and foreign countries; other patents pending.

ROBERTSON WEATHERPROOF SKYLIGHTS

The Robertson Weatherproof Skylight was originally designed with the idea of building the finest possible type of skylight without regard to price. This was done. New production methods and standardization have now brought its price down to the general level of the skylight field. Its quality remains the same.

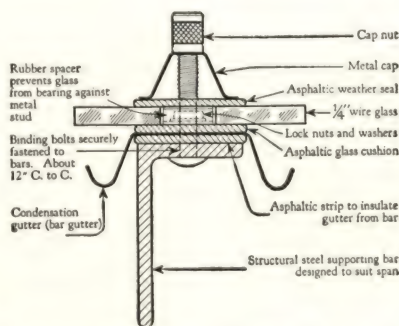
It has these factors of superiority:

(1) It is as strong as any other part of the building. Load-carrying members are structural steel bars, suited to the load and span, with minimum thickness of $\frac{3}{16}$ in. Deflection is never greater than $\frac{1}{30}$ in. per lin. ft. of bar length, under 40-lb. load, with safety factor of 4. Spans up to 20 ft. wide without supporting trusses and without excess deflec-

tion. Any engineer can check the strength with standard deflection formulas for steel structural members.

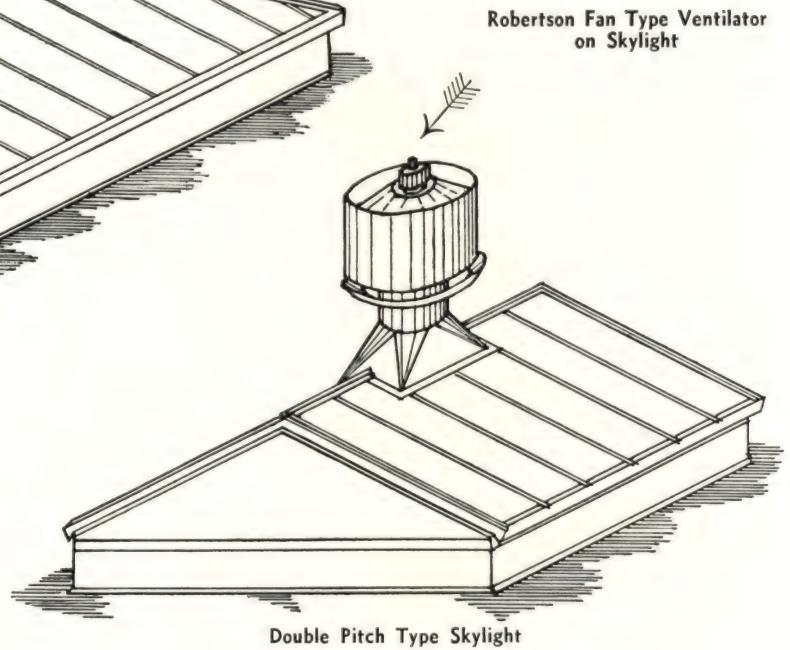
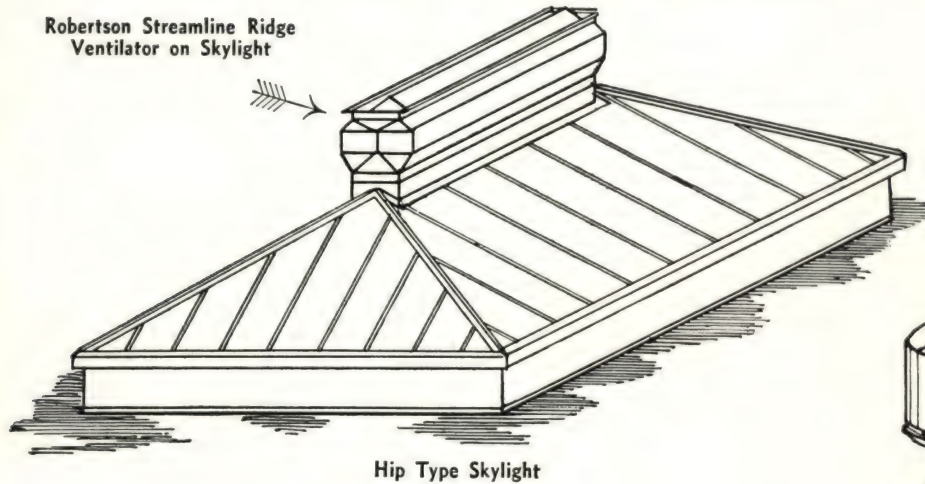
(2) Load-carrying bar and condensation gutter are different units and are separated from each other by asphalt felt cushions. Corrosion in condensation gutter cannot weaken the load-carrying bar.

(3) The weaknesses of both the putty type and the puttyless type are eliminated. There is no putty to decay or fall out; yet the glass is not laid against metal. Asphaltic felt cushions are used between all glass and metal members. The Robertson principle is to keep water completely out, rather than to let it in and drain it off with gutters.



Cross-sectional View Showing Details of Robertson Glazing Construction

SEVERAL TYPES OF ROBERTSON SKYLIGHT CONSTRUCTION

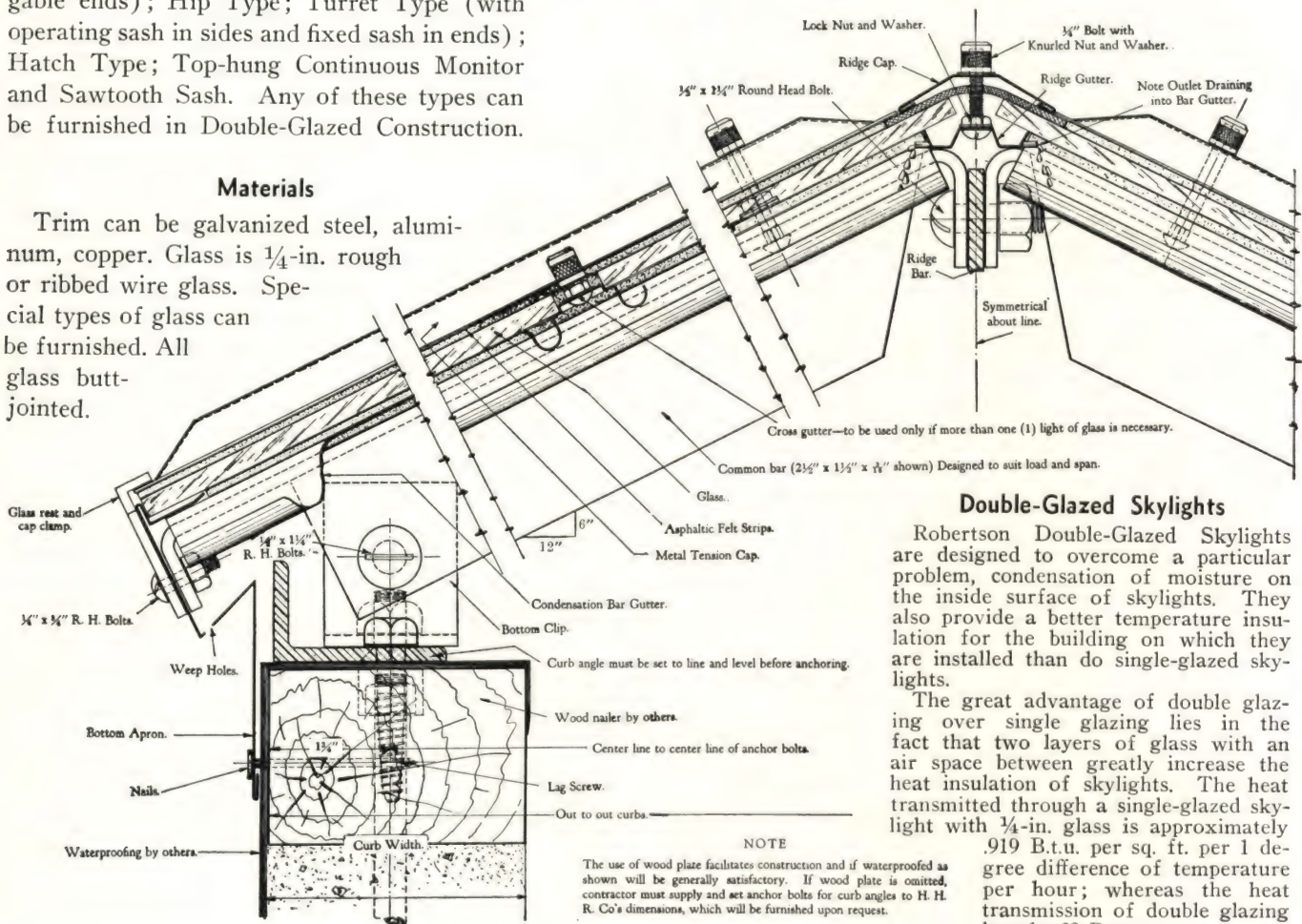


Types

Single Pitch; Depressed Head (with top of skylight inserted under roofing and bottom raised above roofing to provide perfect watershed); Double Pitch (with glass or metal gable ends); Hip Type; Turret Type (with operating sash in sides and fixed sash in ends); Hatch Type; Top-hung Continuous Monitor and Sawtooth Sash. Any of these types can be furnished in Double-Glazed Construction.

Materials

Trim can be galvanized steel, aluminum, copper. Glass is $\frac{1}{4}$ -in. rough or ribbed wire glass. Special types of glass can be furnished. All glass butt-jointed.

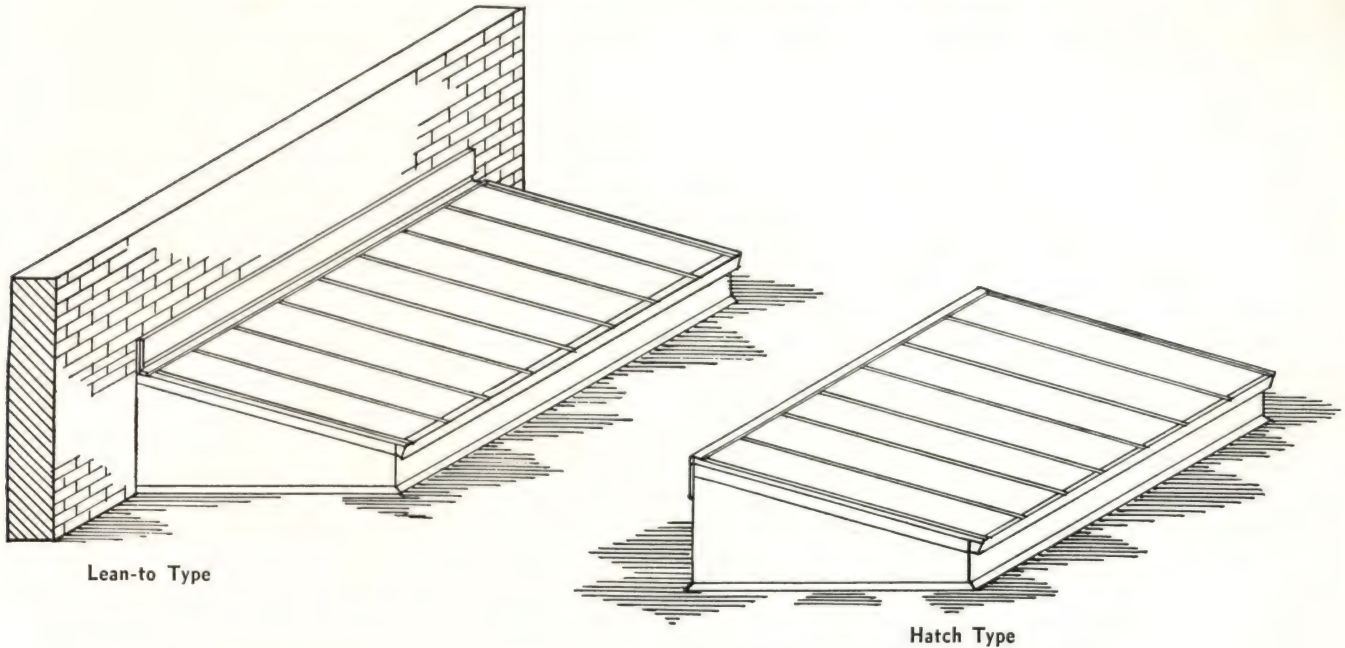


Double-Glazed Skylights

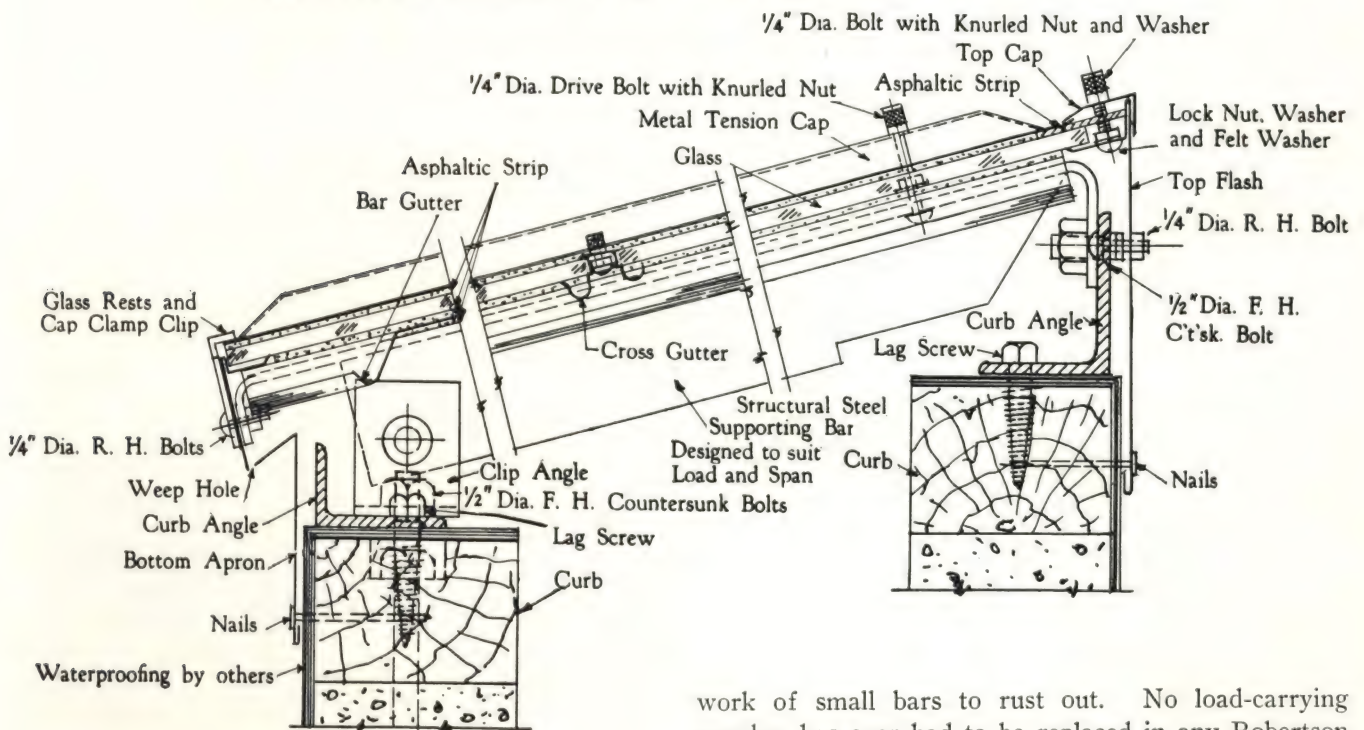
Robertson Double-Glazed Skylights are designed to overcome a particular problem, condensation of moisture on the inside surface of skylights. They also provide a better temperature insulation for the building on which they are installed than do single-glazed skylights.

The great advantage of double glazing over single glazing lies in the fact that two layers of glass with an air space between greatly increase the heat insulation of skylights. The heat transmitted through a single-glazed skylight with $\frac{1}{4}$ -in. glass is approximately .919 B.t.u. per sq. ft. per 1 degree difference of temperature per hour; whereas the heat transmission of double glazing is only .39 B.t.u.

ROBERTSON WEATHERPROOF SKYLIGHTS (Puttyless Type)



ROBERTSON SINGLE PITCH WEATHERPROOF SKYLIGHT



Typical Details

Robertson Sidewall Sash (Puttyless Type)—Designed and fabricated like the steel framework of the building. Entire weight of steel is concentrated in load-carrying bars. Intermediate glass-supporting bars are eliminated. Large panes of glass (up to 6x2 ft.) are used. Structural steel bars used as load-carrying members. The sash does not sag. There is no net-

work of small bars to rust out. No load-carrying member has ever had to be replaced in any Robertson Sash. No putty is used. 1/4-in. wire glass is laid in permanent asphaltic felt cushions. Maintenance is at a minimum.

Trim can be furnished in a choice of materials where corrosive conditions are bad. Sash can be furnished in single- or double-glazed construction, to fit sidewall openings for any proportions. If operators are desired for sash, tension or torsion types, with chain, hand wheel, pole, or electric drives can be furnished.

E. VAN NOORDEN COMPANY

Manufacturers of Vanco Skylights, Ventilators and Sheet Metal Work

TELEPHONE
Highland 3040 to 3042

100 Magazine Street, BOSTON, MASS.

Products

Manufacturers of DURATITE and ANCHOR BAR ROLLED STEEL SKYLIGHTS.

Load carrying members also in bronze and aluminum. Also manufacturers of Stationary and Revolving

Ventilators, Steel Nailing Bucks, Kalamein Work, Bois Steel Stairs, Sheet Metal Work.

Note: Constructions shown on this page are thoroughly protected by United States and Canadian Patents.

DURATITE SKYLIGHT (Patented)

The Duratite Skylight combines steel for load carrying members, and copper or other non-corrosive metal for trim and drainage members.

Steel Work— $1\frac{1}{2}$ x2-in. Steel Tees—approximately 24-in. o.c. Combined with continuous steel base angles and steel ridge and hip members, provide a self-supporting steel structure of great strength. All connections to bars top and bottom consist of steel plates welded to bars. Bolts are used only for field connections.

Trim—Sheet metal portions are of copper, leadcoated copper or aluminum independently applied to the steel structure. This permits a free movement of the imposed members so that expansion and contraction will not affect the weather tightness of the skylight.

Caps (Patented)—Are made with closed ends. They seal the joint at head by flashing into ridge cap. They are underlaid with a weather strip of heavy saturated felt in contact with the glass.

Vanco Saddles and Bolts (Patented)—Bronze saddles are clinched to bars at 20-in. intervals. In combination with $\frac{1}{4}$ -in. brass bolts, they draw the cap and stripping down in contact with the

glass. No snapping of bolts due to expansion and contraction as the saddles permit a free movement.

Bar Gutters (Patented)—The bar gutter encases the flange of steel tee. The special form of the bar gutter permits the application of the saddles above the gutter member—thus there is no penetration of the gutter member by the cap bolt and no possibility of moisture reaching the steel.

Base Gutter and Apron—Collect and drain condensation and protect lower steel portions. Apron serves as cap flashing for roofer's base flashing.

Vanco Double Cross Gutters (Patented)—Glass is butted with double cross gutters inserted to convey condensation. The glass member is entirely segregated from gutter member to prevent conduction of cold and sweating. Lower member absolutely prevents "cross gutter drip."

Glass—Generally $\frac{1}{4}$ -in. wire glass is loose bedded on a cushion of felt. Since the glass rests on a structural member, the glass bed is true and uniform, which prevents the glass from lying "in wind"—a common cause of breakage. Glass generally is 24 in. wide by approximately 48 in. long.

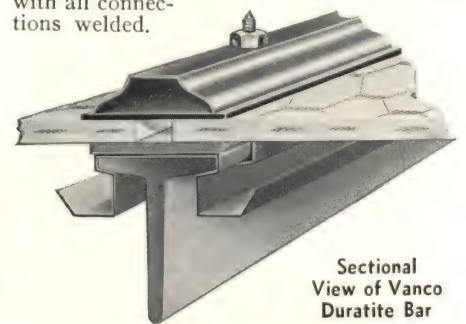
Double Glazing—Duratite skylights are also furnished double glazed where required.

Painting—All steel portions are coated with Vanco Compound to resist corrosion. Additional painting may be added for color finish. The bars are readily accessible for re-painting.

Plating—Steel portions may be treated with a range of protective media, Ship-galvanizing, Parkerizing, Ternizing (a terne coating of tin and lead) and Cadmium-plating.

Truss Bars

Duratite Skylights are trussed for large spans—each bar forms a truss fabricated with all connections welded.



Sectional View of Vanco Duratite Bar

Prominent Installations

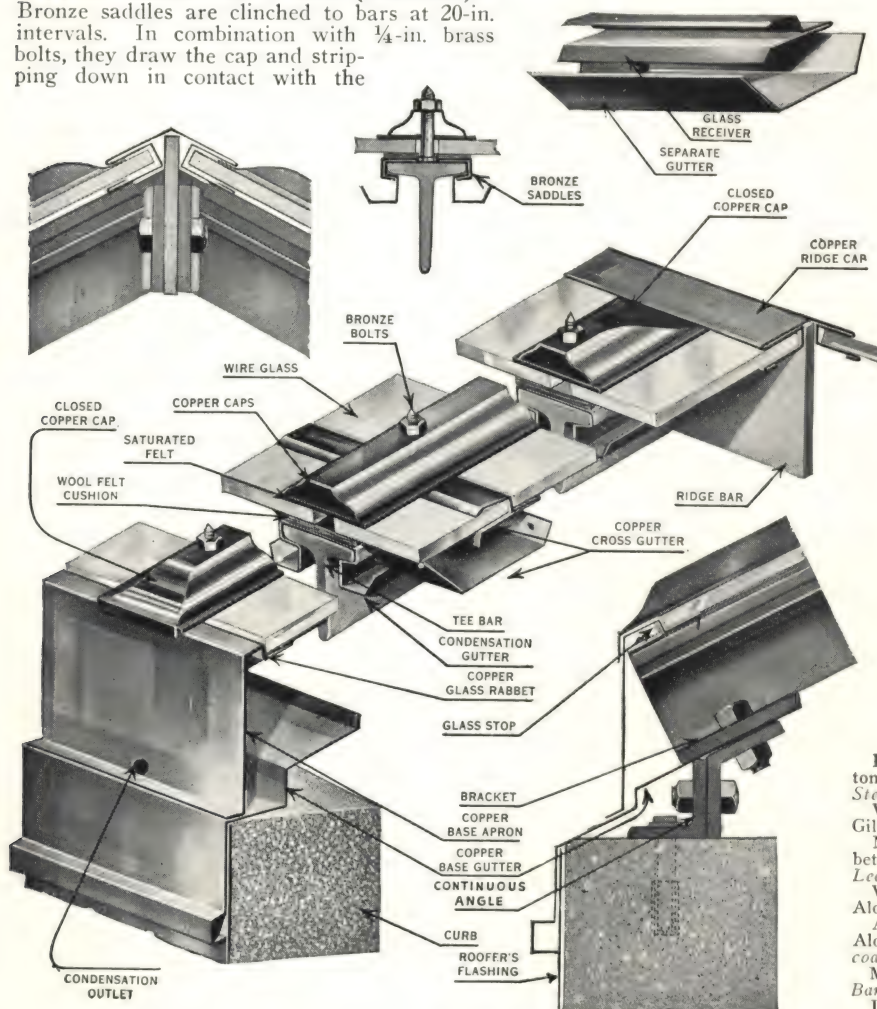
Labor and Interstate Commerce Buildings, Washington, D. C., Arthur Brown, Jr., Architect. *Ternized Steel Bars, Copper Trim*

West Virginia State Capitol, Charleston, W. Va., Cass Gilbert, Architect. *Bronze Bars, Leadcoated Copper Trim.* National Masonic Memorial, Alexandria, Va., Corbett, Harrison & McMurray, Architects. *Steel Bars, Leadcoated Copper Trim.*

Worcester Art Museum, Worcester, Mass., Wm. T. Aldrich, Architect. *Ternized Steel Bars, Aluminum Trim.* Art Museum, Boston, Mass., Guy Lowell and Wm. T. Aldrich, Architects. *Steel Bars, Copper and Leadcoated Copper Trim.*

Metropolitan Museum of Art, New York City. *Steel Bars, Copper Trim.*

Indoor Athletic Field, Wesleyan University, Middletown, Conn., McKim, Mead & White, Architects. *Steel Bars, Copper Trim.*



Sectional Views of Duratite Skylight

VENT-O-LITE COMPANY

Industrial Skylights

4230 West Taylor Street, CHICAGO, ILL.

Product

PUTTYLESS OR PUTTIED, STATIONARY OR VENTILATING GABLE AND SAWTOOTHED SKYLIGHTS.

Feature

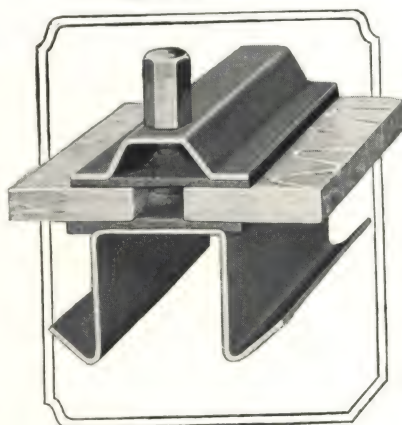
Standard sizes described by the outside to outside dimensions of the curb are carried in stock, to facilitate prompt shipment. Standard sizes are multiples of 2 ft. in width and length.

Construction

Heavy 18-gauge pressed steel sections, assembled without solder and supported on steel angle trusses spaced not more than 6 ft. on centers, provide an individual structure of the skylight unit.

Materials

As required by the nature of building, Vent-O-Lite is furnished in galvanized copper-bearing steel, copper or aluminum.



Standard Puttyless Construction

Designed to reduce maintenance expense, at only a slight increase in initial cost over putty glazing. Vent-O-Lite provides those desirable features required for a high-grade assembly.

Operating Device

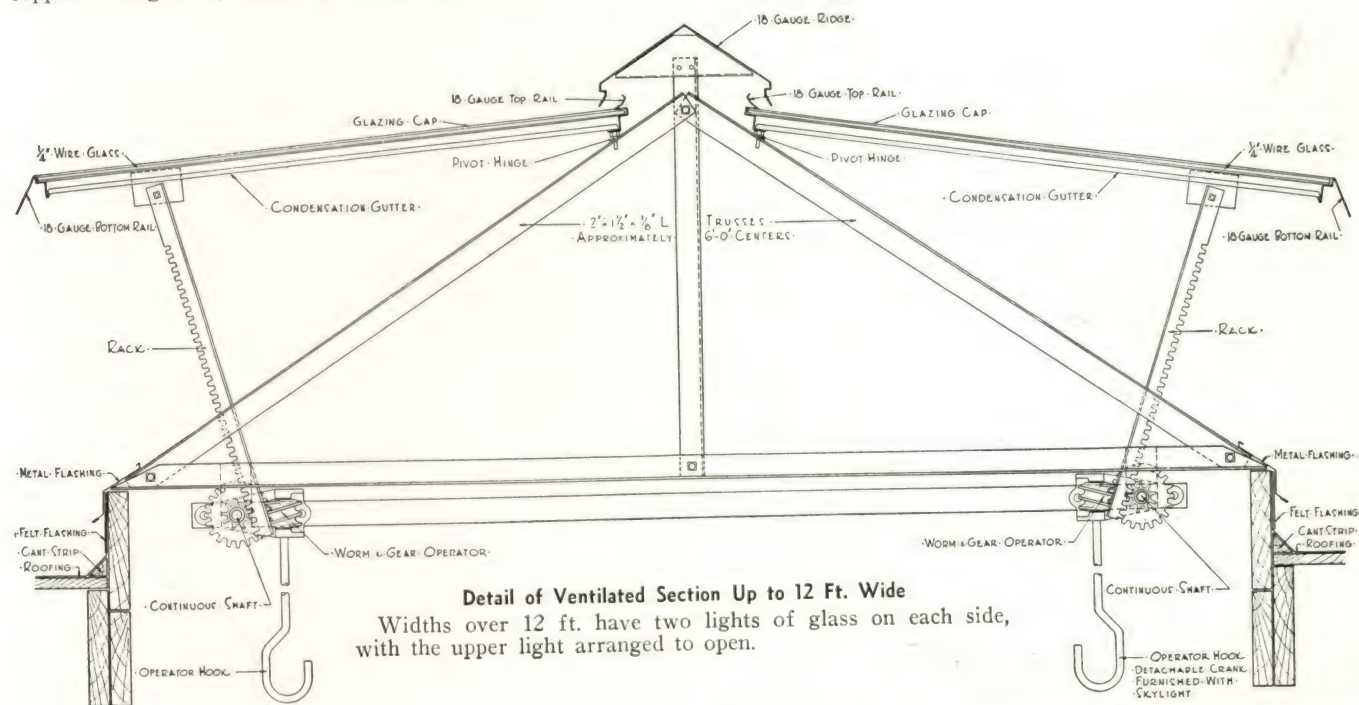
A heavy rack and pinion type driven by a worm and worm gear, controlled from the floor with either loose rod or chain. Information relative motor operator control will be furnished on request.

Erection

These skylights are erected complete by our own erection crew, or can be erected by others from our instructions and setting plans, depending upon the size of the installation.

Details

Detail drawings and specifications to incorporate in the plans of the individual project are furnished by us on request.



Detail of Ventilated Section Up to 12 Ft. Wide

Widths over 12 ft. have two lights of glass on each side, with the upper light arranged to open.



Puttyless Sawtooth Skylights



26,000 Sq. Ft. of Standard Vent-O-Lite

ÆOLUS DICKINSON

INDUSTRIAL DIVISION PAUL DICKINSON, INCORPORATED

TELEPHONE
Lafayette 1862,
1863

Ventilators, Roof Drains, Scuppers and Exhaust Heads

3322-3342 South Artesian Avenue, CHICAGO, ILL.

Products

"ÆOLUS" IMPROVED DOUBLE SYPHON ROOF VENTILATORS; CAST IRON ROOF DRAINS; DICKINSON CAST IRON SCUPPERS; DICKINSON CAST IRON CHIMNEYS (Adjustable Roof Connections); "AIR GATE" SCUPPERS.

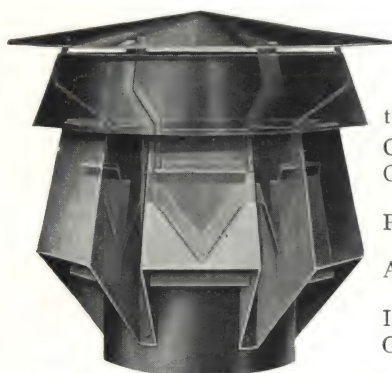
Dickinson Cast Iron Floor Ventilators, (Mushroom Type), Dickinson Cast Iron Exhaust Heads, and Dickinson Cast Iron Wall Vents.

"Æolus" Improved Double Siphon Roof Ventilators

"Æolus" ventilators are used by big industries and railroads as well as on hotels, schools and office buildings. Made of any sheet metal or cast iron. No mechanical parts to get out of order. No maintenance expense.

SIZES AND CAPACITIES ÆOLUS IMPROVED DOUBLE SYPHON VENTILATORS (PATENTED)

Temp. Difference 69° F. outside, 70° F. inside					From Tests Made by L. E. Davies of Armour Institute						
Wind velocity, miles per hour	Period of Time	Size of Ventilator, in.									
		12	14	16	18	20	24	30	36	40	48
		Cubic Feet of Air Through Ventilator									
5	Per min.	435	589	769	973	1,075	1,725	2,689	3,879	4,779	6,901
	Per hr.	26,100	35,340	46,140	58,380	64,500	103,500	161,340	232,740	286,740	414,060
10	Per min.	627	857	1,121	1,417	1,745	2,513	3,919	5,651	6,965	10,049
	Per hr.	37,620	51,420	67,260	85,020	104,700	150,780	235,140	339,060	417,900	602,940



"Æolus" Double Siphon Roof Ventilator

A few recent installations include:

Crane Co.
Commonwealth Edison Co.
Peoples Gas Light & Coke Co.
Atchison, Topeka & Santa Fe Ry.
Illinois Central R. R.
Oxweld Acetylene Co.

Rectangular "Æolus" Ventilators for special conditions or appearance are often used. These can be built complete to fit roof construction either for ridge or slope. They have been popular for installations in and around the Century of Progress.

Grain elevators need efficient roof ventilation. Many installations on these buildings are 147 "Æolus," on a



Baltimore Elevator—56 at South Chicago, also Albany, N. Y., and the large 24-in. x 60-in. above at Omaha.

The grain dust is in constant movement and passes

through the roof. Should an explosion occur the ventilators act as an outlet reducing the forces inside the building.



Semi-siphon and Deflector Type Nuvents

An achievement in a moderate priced effective type is our Nuvent. After a careful study of the air currents in action, this Nuvent design was perfected to fill requirements for a compact ventilator.

The semi-syphons below deflect the air upward and the deflectors at the top also cause a vacuum.



Dickinson Cast Iron Roof Drain

This roof drain is of large area and substantial construction. Made in all sizes with or without expansion joint. Also made with side outlet. Brass and aluminum

drains and expansion joint with wrought iron or brass sleeve. In service on government, industrial and railroad buildings.



La Salle Station Train Shed, Chicago, Ill.



Roof Drain with Expansion Joint

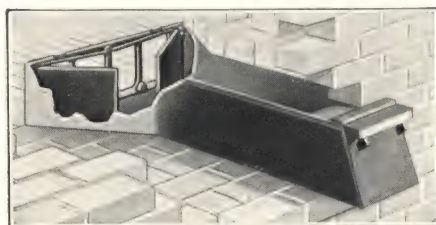
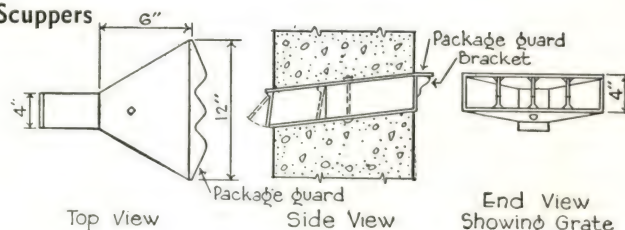


Chicago Mail Building, Chicago, Ill.

Dickinson Cast Iron Scuppers

They only cost a few dollars apiece but are worth their weight in gold when a fire occurs. Construction is entirely of light gray cast iron. They are simple, effective, durable, easily installed and approved by Underwriters' Laboratories, Inc. Made in 9 to 24-in. sizes.

Used in the new Santa Fe warehouses at Los Angeles, Cal., and many other sprinklered warehouses.



"Air Gate" Scupper

"Air Gate" Scuppers

New type scupper with gates and grating on interior of wall. Embodies all features of other types of scupper plus the advantage of both grating and gates on interior end. Made in all wall thicknesses and with cast iron or bronze gates. The inside gates close by gravity and operate on minimum water pressure.

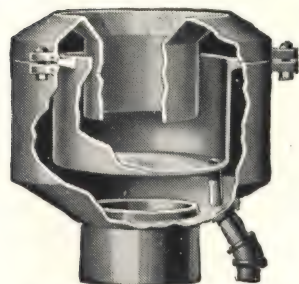
The outside gate overhangs the scupper and will not become sealed when painted.

Dickinson All-Cast-Iron Exhaust Heads

There is a simplicity of design about the Dickinson exhaust head which speaks well for its general practicality.

The Dickinson all cast iron exhaust head will last as long as the average building, overcoming the necessity for replacement.

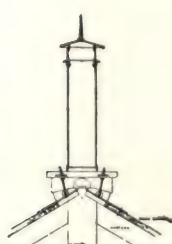
Sizes 1 in. to 5 in. are screwed on; 6 in. up have flange drilled to fit standard companions.



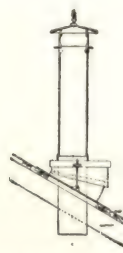
Dickinson All-Cast-Iron Exhaust Head



Installation of Dickinson All-Cast-Iron Exhaust Head



Ridge Type



Slope Type

Cast Iron Chimneys

Dickinson Cast Iron Adjustable Chimneys

These chimneys are used on small buildings, garages, etc. The roof connections are adjustable to the pitch of the roof, both ridge or slope types. They are made to fit 5, 6, 7 and 8-in. pipe diameters, any length above and below roof connection.

Also cast iron extensions for brick chimneys.

Information

Further information, prices, etc., gladly supplied.

MEMORANDA

THE ALLEN CORPORATION

Member of Roof Ventilator Institute

Engineers and Manufacturers of Ventilating Appliances

14th and Lafayette Streets, DETROIT, MICH.

SALES ENGINEERS IN ALL PRINCIPAL CITIES

Products and Services

ALLEN TURBINE VENTILATORS—the original and widely copied turbine ventilator.

ALLEN ELECTRO-WIND TURBINE VENTILATORS—a combination wind and electrically driven ventilator of exclusive design.

ALLEN ELECTRIC EXHAUST FANS—size 10 to 30 ins.; capacities 800-15000 c.f.m. (Write for folder.)

ALCO STATIONARY VENTILATORS—an efficient ventilator, reasonably priced. (Write for folder.)

ALLEN ATTIC FANS—size 24 to 60 ins. (Write for folder.)

Allen Engineering Service—We are happy to make layouts and suggestions for solving your ventilation problems.

Allen Multi-Vane Turbine Ventilator

For many years the unique features of this turbine ventilator have appealed to architects and engineers, who have specified and insisted on their use, because of their simplicity, durability, quiet operation and efficiency under conditions where the ordinary ventilator is unsuitable.

The *Turbine* principle of exhaust is recognized as the most efficient devised. To this turbine Allen Engineers have added the inverted displacement cone and famous inner *multi-vanes*, exclusive features embodied in the construction of the Allen Turbine Ventilator. Conservatively rated, the published capacities of Allen Turbine Ventilators are used in determining the number and sizes of units to effect a predetermined number of air changes to meet the modern demand for fresh, healthful air.



The Allen Multi-Vane Turbine Ventilator

Widespread use of the Allen Turbine Ventilators throughout the world among industrial plants of all kinds, schools, institutions, stores and homes is ample indication of the favorable esteem in which they are held.

Allen Electro-Wind Turbine Ventilator

Every phase of the requirements for ventilation has been considered and met in the construction of this Allen Electro-Wind Turbine Ventilator. It is exactly what the name would imply, a ventilator which is power operated for extraordinary, peak period requirements, and wind driven for normal exhaust. Architects and engineers recognize this outstanding feature as a remarkable achievement, for its adaptability is not limited by adverse static pressures, irregular building heights or other wind obstructions which mitigate the effect of the ordinary ventilator, fan ventilator or fan.

Exclusive features of the Allen Electro-Wind Turbine Ventilator:

- (1) Motor not in path of exhaust.
- (2) Exhaust not affected by wind direction.
- (3) No penthouse required.
- (4) No back-draft when power is off.
- (5) Two speeds without variable speed motor.
- (6) No power consumption at low speed.
- (7) In most cases may be plugged into lighting circuit.
- (8) Low power consumption when electrically driven.
- (9) Specially designed, full automatic free-wheeling driving clutch.
- (10) A powerful, positive exhaust when wind driven.



Allen Electro-Wind Turbine Ventilator (With Motor Cover Removed to Illustrate Method of Drive Mounting)

RATED DISPLACEMENT CAPACITIES ALLEN TURBINE VENTILATORS

Size, in. (Throat diam.)	Free air displacement, cu. ft. per hr.		
	Wind vel. = 4 m.p.h.	Wind vel. = 8 m.p.h.	Electrically driven
8	17,300	21,600	.....
10	26,500	32,500	.....
12	38,600	46,200	.....
15	54,000	69,000	129,600
18	85,200	102,100	204,480
20	105,100	125,600	252,240
24	149,000	185,000	324,000
30	225,000	272,000	487,500
36	281,000	330,000	612,000
42	324,000	414,000	702,000
48	360,000	473,000	780,000

AREX COMPANY

Industrial Ventilating Engineers

333 Michigan Avenue Building, CHICAGO, ILL.

AGENCIES IN PRINCIPAL CITIES
FACTORY AND WAREHOUSE: GARY, IND.

Products

AREX-AUSTOR (Air Exhauster), the Original Siphonage Roof Ventilator—"The Power Fan's Only Rival."

ECONOMY VENTILATOR (Plain and Fan Types).

"AREX" ADJUSTABLE LOUVERS.

Also "Arim" Anti-draft Window Ventilators installed in sash.

For Fans and Blowers, see File Index.

Arex-Austor



Scientific Design—This ventilator, designed on the original siphonage principle, assures by natural means constant, positive and uniform ventilation. Siphon or vacuo chambers are placed to concentrate all wind currents into a steady pulling force; by means of deflections opposite each siphon (see sectional view on following page) a powerful vacuum is created, drawing out air at a tremendous speed. Foul air, warm air, fumes, gases, vapors, steam and smoke are quickly and completely removed. Passing wind plays upon the siphons so as to accelerate outflow of foul air from interior of building, but it permits no outside wind to enter the ventilator. Every

opening is an outlet. Under ordinary conditions Arex-Austor will remove 300 cu. ft. of foul air per square inch per hour on a 9-mile wind velocity. Upper part consists of a conical deflector top surrounded by a scientifically adjusted broad storm-guard, making the Arex-Austor absolutely stormproof.

Construction—Fabricated in one solid unit, no solder used, every joint rigidly riveted. No movable parts; no shutters, or louvers to break off; no ball bearings to clog; no meaningless fancy trimmings to impede ventilating action; nothing to get out of order—a ventilator, simple in principle, durable in construction and sure to give year-in and year-out service without attention or repair.

Made of galvanized iron, ingot or toncan metal, cold-rolled copper, wrought iron or special metal, any size or gauge. Special bases and pipe connections made to order—submit sketch.

Arex-Austors, 24 in. and upwards, are provided with brass bolts connecting the frustum to siphons. This permits installation in two halves and facilitates painting inside and outside at any time after they have been installed.



Condensation arrestors furnished at nominal cost when requested.

Facilities for turning out any quantity of any size ventilators on short notice. Prompt shipments from large stock always on hand.

Wide Adaptability—Thousands of installations have proven the Arex-Austor to be the ideal ventilator for mills, factories, foundries, warehouses, power plants, train sheds, railway cars, ships, theaters, hospitals, schools, etc. Can be installed on flat roofs, sawtooth roofs, slant roofs or on skylights and monitors.

Standard Specifications for Arex Ventilators — All roof ventilators to be Arex original siphonage ventilators as patented and manufactured by the AREX COMPANY, 333 Michigan Avenue Building, Chicago, Ill.



Bottom View

From actual photograph. Note extraordinary outlet for escape of air—greater than other ventilators. Observe immense ventilating area—deep, penetrating siphons—triangular channels between siphons. Well-balanced and mechanically perfect throughout

Engineering Service

Our Engineering Department will solve your ventilating problems. First and foremost requirement is air exhaust capacity. Every factor that makes for or against results is of vital importance. The mere purchase of ventilating units does not in itself always solve a problem. That is why we with nearly 30 years' experience and the record of 200,000 successful installations, recognizing our position and responsibility as the largest exclusive manufacturers in this field, surround our product with an engineering service aimed to assure maximum Arex efficiency.

This service consists of analyzing a problem, preparing sketch or blueprint, making correct recommendation and giving valuable information and expert advice on this all-important subject of ventilation. Expert advice without obligation. It will pay you to investigate. Thousands of installations without a single complaint.

Caution: The phenomenal success of Arex Ventilators has provoked petty imitations by name, design or principle. Beware of such infringements. Arex is the only trade-name under which our ventilator is sold.

Manufacturing Facilities

Our modern plant and warehouse at South Gary, Ind., afford us unequalled advantages for manufacturing and shipping standardized ventilators in large quantities on short notice.

Economy Roof Ventilator

This ventilator is designed to meet the demand for a ventilator at lowest possible cost, yet capable of solving any ordinary ventilating problem.

Manufactured in attractive proportional design of solid sturdy construction. Absolutely guaranteed stormproof. Furnished with or without damper or base. Made in same sizes and gauges as Arex-Austors. Workmanship and materials are of the same high quality.

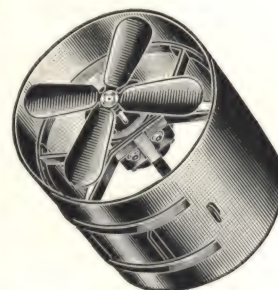
Prompt shipment from large stock always on hand.



Economy Roof Ventilator

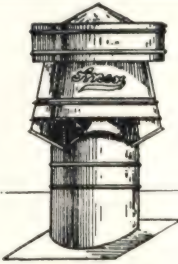
ECONOMY FAN UNITS

Vent. in.	Fan diam., in.	Hp.	Blades	Total ex., cu. ft. per min.	Ship. weight of unit, lb.
10	8	1/40	4	400	65
12	10	1/40	4	625	85
14	10	1/40	4	850	90
16	12	1/20	4	1,150	105
18	14	1/20	4	1,625	130
20	16	1/10	4	2,110	150
24	18	1/8	4	2,825	180
30	24	1/6	4	4,600	240
36	30	1/4	6	7,950	280
42	30	1/4	6	9,050	375
48	36	3/4	8	13,600	425
54	42	1	8	18,100	550
60	48	2	8	25,400	800
66	54	2	8	29,500	1,000
72	54	2	8	31,400	1,225
84	60	3	8	42,900	1,390

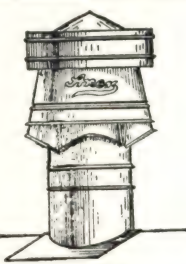




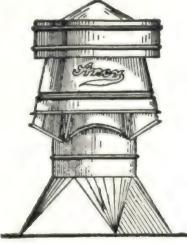
No. 1
Round Base for Flat Roof



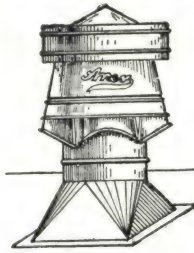
No. 3
Round Base for Slant Roof



No. 5
Round Base for Gable Roof



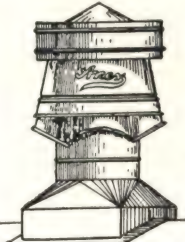
No. 7
Square to Round Base for Flat Roof



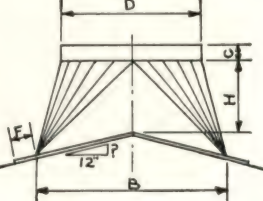
No. 8
Square to Round Base for Slant Roof

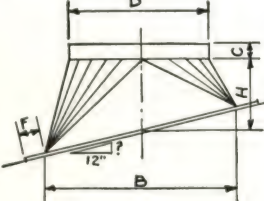


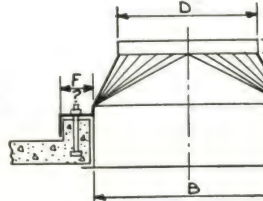
No. 9
Square to Round Base for Gable Roof



No. 12
Square to Round Base with Shoulder for Gable Roof







DATA, AREX-AUSTOR (ORIGINAL SIPHONAGE) VENTILATORS

Principal dimensions, in.			Exhaust per hour, cu. ft.	Gauge of ventilators		*Ship. wt., lb.
D	O. W.	O. H.		Galv. iron	Copper oz.	
12	18	24	37,699	24	16	28
14	21	28	51,313	24	18	38
16	24	32	67,021	24	18	54
18	27	36	84,823	24	18	68
20	30	40	104,720	22	18	93
24	36	48	140,796	22	20	130
30	45	60	235,619	22	20	225
36	54	72	339,293	20	24	405
42	63	84	461,813	20	24	475
48	72	96	603,187	20	28	620
54	81	108	763,407	20	32	800
60	90	120	942,477	18-20	36	910
66	99	132	1,140,397	18	36	1170
72	108	144	1,357,167	16-18	44	1450
84	126	168	1,847,256	16	48	2225

*Weights given are for ventilators only.

DATA, AREX-AUSTOR (ORIGINAL SIPHONAGE) BASES

Dimensions of bases, in.				Gauge of bases	
B	H	F	C	Galv. iron	Copper, oz.
15 x 15	12	4	3	24	16
17½ x 17½	13	4	3	24	18
20 x 20	14	4	3	24	18
22½ x 22½	15	4	3	24	18
25 x 25	16	4	3	22	18
30 x 30	18	4	3	22	20
37½ x 37½	21	4	3	20	20
45 x 45	24	4	3	20	24
52½ x 52½	27	5	4	20	24
60 x 60	30	5	4	18	28
67½ x 67½	33	5	4	18	32
75 x 75	36	5	4	18	36
82½ x 82½	39	6	5	16	36
90 x 90	42	6	5	16	44
105 x 105	48	6	5	16	48

Shipping weight of bases is approximately one-third of that given for ventilators.



Sectional View of Arex-Austor

DETAILS AND DATA, AREX-AUSTOR VENTILATORS AND BASES

AREX ORIGINAL ACCELERATED LOUVER

Adaptability—These high-grade louvers are installed to insure adequate fresh air supply in connection with any heating and ventilating system, in schools, factories, power plants, public buildings, transformer vaults, etc.

Advantages—(1) Easy to operate—no sticking. (2) Absolutely foolproof. Practically indestructible. (3) Absolutely stormproof and weatherproof. (4) Blades do not protrude when louver is open. (5) Can be installed in series of two or more units to fit any size opening. (6) Blades can be removed entirely in case of emergency. (7) Furnished with bird or insect screen if required. (8) Also made of cold rolled copper or any other special material. (9) Frame and blades made of 16-gauge galvanized steel. (10) Can be furnished in any special size in gauges up to No. 10. (11) Plain stationary type without adjustment can be furnished.

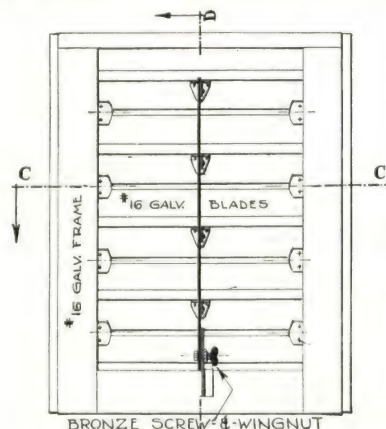


Arex
Accelerant
Louver

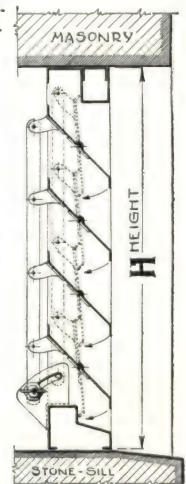
Construction Features—(1) Bronze bearings in frame. (2) Bronze pivots in blades. (3) Bronze setscrews and slide. (4) Adjustable device to lock in any position. (5) Standard depth 4 in. for any brick or concrete wall. (6) Perfectly balanced. (7) Furnished with friction control for installation at roof line or at other

high locations so as to be operated from below by means of a pole or chain. (8) If louvers are to be operated by thermostatic control, they can be furnished with ball-bearing blades and the necessary lever connections. (9) Can be furnished with fusible link so as to close automatically in case of fire. (10) For adjustment in series. Can be furnished with crank or motor worm gear operation.

Specifications—All louvers to be Arex Accelerant Louvers as manufactured by AREX COMPANY, 333 Michigan Avenue Building, Chicago, Ill.



INSIDE VIEW



SECTION D-D

THE BURT MANUFACTURING COMPANY

ESTABLISHED 1890

Manufacturers of Roof Ventilators

600 Main Street, AKRON, OHIO

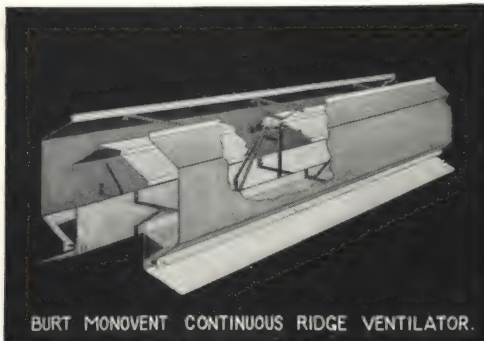
OVER 75 FACTORY REPRESENTATIVES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA
Name and address of your nearest representative will gladly be supplied on request

BURT VENTILATORS—A SIZE AND TYPE FOR EVERY CONDITION

Thirty-five years' experience has definitely proven that no one type of roof ventilator can adequately handle all problems. For this reason, the Burt line contains several types, one of which or a combination of which will fit any particular application.

Each unit is constructed with workmanship such as only long experience can produce.

Standard material is high grade, prime open-hearth Galvanized Steel. Optional materials are Copper Bearing Steel, Toncan Metal, Armco Ingot Iron, Cold Rolled Copper, Lead Coated Copper, Zinc, Aluminum, Monel, Stainless Steel and Feltcote Protected Metal. Each unit is fully guaranteed against defects in material and workmanship.



BURT MONOVENT CONTINUOUS RIDGE VENTILATOR.

Type 60

Superiority of Monovent Construction

(1) Scientifically designed windband gives architectural symmetry and maximum wind suction effect, together with storm-proofness. (2) Inner deflecting baffle prevents back draft from outside upward flowing air currents and directs internal circulation to secure greatest wind suction effect. (3) Roof flange is broken, at the factory, to the exact roof pitch, avoiding unnecessary built-up frames. Can be prepared for ridge, slope, deck or curb. (4) Drain openings large to avoid clogging and adjacent to warm airshaft to keep snow melted out. (5) Airshaft braces cause least interference with roof members while amply bracing unit. (6) Windband braces designed to eliminate any rocking. (7) Operating mechanism is housed beneath damper, fully protected from weather. Damper operates vertically with minimum chain pull. As many as four 10-ft. lengths of damper can be operated as a unit in some sizes. With fusible link in operating chain, it becomes fire-retarding automatic closing. (8) Screens are framed and rest on upper windband cross braces. Fastened by screws they are easily and quickly removable for cleaning. (9) Sections are uniform—fit each other, end fittings and damper junction baffles without tailoring on job. (10) Available in all materials.

Monovent Applied to Industrial Ventilation

A comparison of capacities and prices shows that the same air movement can be secured with the Monovent at a saving of $\frac{1}{3}$ over the cost of unit gravity ventilators. At the same time a more even exhaust distribution is secured. When conditions are severe or where certain spots require intensive exhaust, a combination of Monovent and Forst-Aire Fan units will be found ideal.

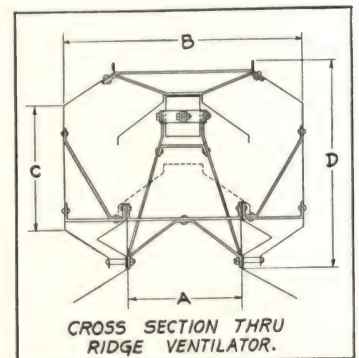
Monovent Applied to Residential Ventilation

The 3- and 4-in. sizes of Monovent are designed expressly for the natural ventilation of residential attics. As a rule lack of air circulation in these spaces during hot weather produces a "bake-oven" effect which affects, to a marked extent, the temperature of the rooms below. Monovent applied at the roof ridge with air inlets to the attic will greatly reduce this "bake-oven" effect.

Note: Sections of Monovent are 10-ft. overall length. The 1-in. lap at each section joint causes a loss of $\frac{1}{2}$ in. per joint in net ventilator length.

BURT MONOVENT CONTINUOUS RIDGE VENTILATOR

Here is a ventilator unit which enables its user literally to "take the roof off." It not only provides a uniform, storm-proof opening the entire length of a roof, but also, due to its design, harmonizes architecturally with the building design and avoids entirely the broken roof line of the unit ventilator. Capacity Tables, based on Stack Effect only are extremely conservative since capacity will be increased when wind blows across the unit. Can be applied to ridges, slopes, decks and built-up curbs without special roof treatment. Available in standard and optional materials.



CROSS SECTION THRU RIDGE VENTILATOR.

DIMENSIONS, WEIGHTS, CAPACITIES

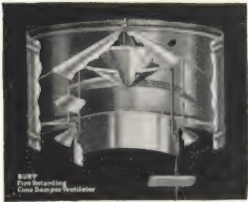
Vent size, inches*		3	4	6	9	12	18	24
Ga. galv. Oz. Copper		24 16	24 16	24 16	24 16	22 18	20 18	18 20
Dimen- sions, inches	A	3	4	6	9	12	18	24
	B	6 $\frac{3}{4}$	8 $\frac{3}{4}$	13 $\frac{1}{4}$	19 $\frac{1}{2}$	26	36 $\frac{3}{4}$	46 $\frac{1}{2}$
	C	4 $\frac{3}{8}$	5 $\frac{1}{2}$	7 $\frac{1}{2}$	10	12	18 $\frac{1}{2}$	23 $\frac{1}{4}$
	D	6 $\frac{1}{2}$	8 $\frac{3}{4}$	12 $\frac{1}{4}$	16 $\frac{1}{4}$	21	30 $\frac{3}{8}$	36 $\frac{1}{2}$
Net wt., lbs. per 10 ft.	Galv. Copper	48 44	60 54	91 83	124 103	188 160	330 249	497 328
Ship'g. wt., lbs. per 10 ft.	Galv. Copper	92 88	106 100	142 134	195 174	280 252	440 359	631 462
Temp. diff., deg. F.	Stack ht. feet	Capacity per 10 ft. section C.f.m.						
10	10	362	478	725	1090	1450	2180	2900
	20	513	677	1025	1538	2050	3075	4100
	30	628	828	1250	1880	2510	3760	5020
	40	725	957	1450	2170	2900	4350	5800
	50	813	1080	1625	2440	3250	4880	6500
20	10	513	677	1025	1538	2050	3075	4100
	20	725	957	1450	2170	2900	4350	5800
	30	888	1172	1775	2660	3550	5320	7100
	40	1025	1360	2050	3070	4100	6140	8200
	50	1150	1530	2300	3430	4580	6860	9160
30	10	628	828	1250	1880	2510	3760	5020
	20	888	1172	1775	2660	3550	5320	7100
	30	1090	1436	2180	3260	4350	6520	8700
	40	1250	1657	2510	3760	5020	7530	10040
	50	1400	1855	2800	4210	5620	8420	11240
40	10	725	957	1450	2170	2900	4350	5800
	20	1025	1360	2030	3070	4100	6140	8200
	30	1250	1657	2510	3760	5020	7530	10040
	40	1450	1914	2900	4350	5800	8700	11600
	50	1620	2140	3240	4860	6480	9720	12960

*Built in larger sizes on special order. Data supplied on request.

BURT HIGH EFFICIENCY FIRE RETARDING CONE DAMPER VENTILATOR

An examination of the following typical capacities will indicate that this unit type gravity ventilator has been engineered to move large quantities of air under all wind and temperature conditions. Large, unrestricted outlet openings in the head, diameter and height of windband and the inverted Cone Damper

are factors contributing to its efficiency. The patented Spring Clip allows the damper to be placed in any desired position and a fusible link between clip and damper makes a fire-retarding automatic closing unit which is listed by the Underwriters' Laboratories, Inc. Made in all standard and optional materials.



Type 50

DIMENSIONS, WEIGHTS, CAPACITIES

Size, inches.	8	10	12	14	16	18	20	24	30	36	42	48	54	60	66	72
Ga. galv.	22	22	22	22	22	20	20	20	18	18	18	18	18	16	16	16
Oz. copper	16	16	16	16	16	18	18	18	20	24	24	24	28	28	28	32
Net wt., lbs.	11	15	22	28	37	51	60	74	116	218	290	385	472	680	865	1002
Overall dia., in.	14 1/4	18 1/4	21	25 1/2	27 1/2	30	34 1/2	39	52 1/2	60	69	78 1/2	89	99	109 1/2	118 1/2
Overall ht., in.	14 1/4	16 1/2	19 1/2	23	24	26 1/2	28	35	40	46	54	62	71	80	88	94
Cap., C.f.m.*	255	392	575	774	1015	1270	1540	2180	3280	4440	5700	6950	8460	9260	11,250	13,400

*Temp. diff. 20 deg. F. Stack ht. 40 ft. Wind velocity 10 m.p.h. From tests of actual operating conditions by Prof. G. L. Tuve of Case School of Applied Science, Cleveland, Ohio.

BURT "FORST-AIRE" FAN VENTILATOR

DIMENSIONS, WEIGHTS, CAPACITIES

Size, inches	Ga. galv.	Oz. copper	Net wt., lbs.	Overall dia., inches	Overall ht., inches*	Motor		Capacity C.F.M.
						H.P.	R.P.M.	
12	22	16	82	21	31 1/4	1/10	1725	690
14	22	16	99	25 1/2	35	1/10	1725	1200
16	22	16	104	27 1/2	36	1/10	1725	1850
18	20	18	125	30	38 1/2	1/10	1725	2440
20	20	18	151	34 1/2	43		1140	2990
24	20	18	170	39	50		1140	4300
30	18	20	347	52 1/2	58		860	6350
36	18	24	483	60	64		860	10600
42	18	24	625	69	72		675	11130
48	18	24	798	78 1/2	80		675	14500

*Exclusive of base.

Ventilator Head—High Efficiency Cone Damper—extremely low resistance and high capacity.

Motor Mounting—Special design, rubber cradled to absorb noise and vibration, yet rigid and secure.

Ventilator Types—Standard; Heat Resisting; Acid Resisting; Static Pressure.

Motors—Totally Enclosed, Fan Duty, Vertical, Ball Bearing. Class 1, Group D optional. Single or Multi-Speed. 110 V., 1Ph., Standard on 1/10 and 1/6 h.p., 220 V., 3 Ph. on larger sizes. Other power characteristics optional at slight delivery delay.



Type 90

Burt Sliding Sleeve Damper Ventilator



Type 20

Available in either Metal or Glass Top, latter serving as skylight as well as ventilator. This unit is moderately priced and well made, having been in the Burt line for thirty years. Although its air moving capacity is not so great as the High Efficiency Cone Damper Unit, the Sliding Sleeve Damper offers little obstruction in the airshaft and does not create air turbulence in any position. Glass Top equipped with heavy ribbed wire glass secured by notched rim and water proof cement. Available in all materials.

DIMENSIONS, WEIGHTS, CAPACITIES

Size, inches.	8	10	12	14	16	18	20	24	30	36	48	60
Ga. galv.	24	24	24	24	24	22	22	22	20	20	20	18
Oz. copper	16	16	16	16	16	18	18	18	20	20	20	24
Net wt., lbs.	8	11	15	19	23	35	45	55	88	130	216	445
O.A. dia., in.	14 1/4	17 1/4	20 1/4	23 1/4	26 1/4	32 1/4	38 1/4	47 1/4	57	75 1/4	95	
O.A. ht., in.	12	14 1/4	16	17 1/4	19	21	22 1/2	26 1/2	31 1/2	37	52	62 1/2
Cap., C.f.m.*	191	294	435	580	765	955	1155	1635	2460	3330	5215	6950

*Temp. diff. 20 deg. F. Stack ht. 40 ft. Wind velocity 10 m.p.h.

Burt Louvre Dampers

Can be fitted into any Burt Ventilator where this type of damper is required. An exceptionally tight damper, it can be supplied with felted edges when necessary. Extremely well balanced and easy operating. When operated by hand a fusible link makes it self-closing and fire-retarding. Also supplied in electric control by damper motor for manual or thermostatic operation. Can be arranged to automatically close when current is interrupted or to suit requirements of particular job. Available in all materials.

Burt Ball Bearing Revolving Ventilator



Type 80

A finely balanced, high capacity revolving unit. Two sets of Ball or Timken Roller Bearings give positive assurance of free turning. Patented open back acts as stabilizer in eddying winds. Outlet opening is large and air passage unrestricted. Large top overhang assures storm-proofness. Head support tube and braces sufficiently strong to withstand great wind pressures. A study of typical capacities given will indicate its efficiency. Available in standard and optional materials.

DIMENSIONS, WEIGHTS, CAPACITIES

Size, inches.	8	10	12	14	16	18	20	24	30	36	48	60
Ga. galv.	22	22	22	22	22	20	20	20	18	18	18	16
Oz. copper	16	16	16	16	16	18	18	18	20	24	24	28
Net wt., lbs.	7	8	24	34	46	51	60	81	132	178	387	642
O.A. lgh., in.	18 1/4	23 1/2	28 1/4	30 3/4	35	40 1/2	43 1/4	49 1/2	56 1/2	61 1/2	89	110
O.A. ht., in.	20	25	30 1/2	34 1/2	35	36	38 1/2	44	54	52 1/4	74 1/4	90 1/2
Cap., C.f.m.*	242	372	546	735	965	1207	1465	2071	3116	4218	6603	8797

*Temp. diff. 20 deg. F. Stack ht. 40 ft. Wind velocity 10 m.p.h.

Burt Ventilator Bases

Tailor made for each job to fit the exact contour and pitch of roof. Made in three styles: round, square and pyramidal. Each unit is well riveted and soldered and contains correctly located condensation gutter draining to outside. When supplied for built-up curb, weight is properly carried to top of curb and deep flashing skirt drops over curb side. Supplied in all materials.

DIMENSIONS AND WEIGHTS

Size, inches	8	10	12	14	16	18	20	24	30	36	42	48	54	60	66	72
Ga. galv.	22	22	22	22	22	20	20	20	18	18	18	18	18	16	16	16
Oz. copper	16	16	16	16	16	18	18	18	20	24	24	24	28	28	28	32
Roof Opening, in.	8	10	12	14	16	18	20	24	30	36	42	48	54	60	66	72
Base height, in.	6	6	6	8	8	8	8	8	10	10	10	12	12	12	12	18
Roof flange, inches	4	4	4	4	4	4	5	5	5	6	6	6	6	6	6	6
Net weight, lbs.	3	4	5	7	8	12	15	18	29	43	51	72	97	148	195	225
	4	6	8	10	12	18	23	28	44	65	76	108	145	223	293	336

MEMORANDA

CENTURY FAN & ENGINEERING CO.

Manufacturers of Roof Ventilators

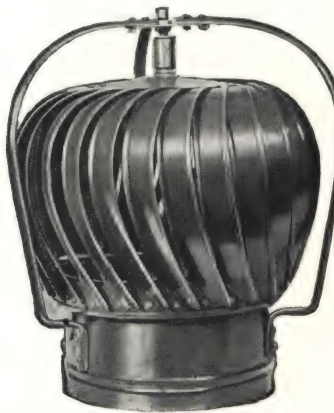
500 East 134th Street

NEW YORK, N. Y.

HIGH GRADE GRAVITY AND POWER VENTILATORS AT LOW COST

Dampers furnished to operate by chain, pneumatic or electrical control when required

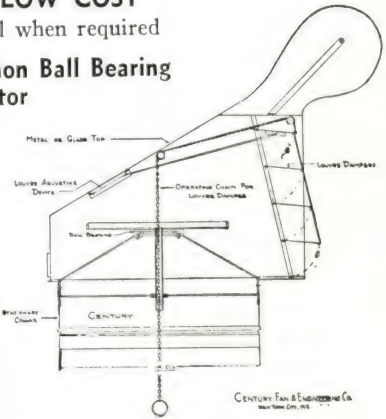
Century Turbine Rotary—Ball Bearing Ventilator



The Century Turbine Rotary Ball Bearing Ventilator is the most constant exhauster for general purposes as it rotates with a one mile wind and exhausts air while other types are idle. The bearings are designed for high speed, silent rotation. The Century Turbine is symmetrical in design and low in height. It is usually specified for schools and similar buildings because of its very pleasing appearance. Twenty-inch sizes and larger are equipped with internal baffle and multi-blade fan for added efficiency and absolute weatherproofness.

Century Rotary Syphon Ball Bearing Ventilator

Of unusually heavy construction this unit is particularly suited for industrial buildings. The entire stack area is away from the wind at all times and the air is exhausted with the least possible resistance. The Century Rotary Syphon is equipped with the finest precision oversized bearings which last indefinitely and require no attention or relubrication.



The face of the ventilator is equipped with adjustable louvers.

Neck diam., in.	Overall, in.		Ga. galvanized painted	Oz. copper	Exhaust cap. 5-mile wind 20° temp. diff. c.f.m.
	Width	Height			
12	20	17	28 and 22	16 and 20	650
18	28	23	28 and 22	16 and 20	1450
24	38	32	28 and 22	16 and 24	2150
30	48	38	24 and 20	16 and 24	3400
36	54	42	24 and 20	18 and 24	4250
42	60	51	24 and 20	18 and 24	4900
48	66	58	24 and 20	18 and 24	5500

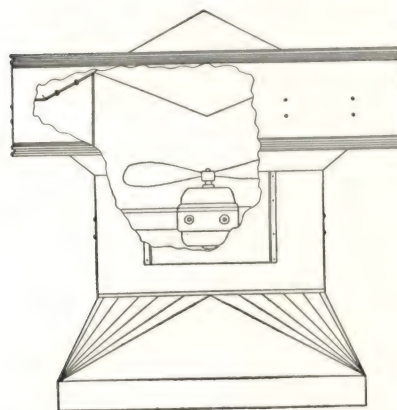
Made in all sizes from 6 to 48 in. diameter.

The Century Syphon Stationary Ventilator

This type of stationary ventilator is of the highest efficiency. Its design utilizes every wind current to create a powerful suction through the stack. It is exceptionally sturdy in construction and will withstand the severest wind pressure. Furnished in any size or alloy metal.



Neck diam., in.	Width, in.	Height, in.	Ga. galv.	Oz. copper	Exhaust cap. 5-mile wind 10° temp. diff. c.f.m.
12	20	22	24	16	350
18	28	32	24	18	825
24	38	42	22	20	1200
30	48	50	22	24	1975
36	54	60	20	24	2600



Century Fan Ventilator

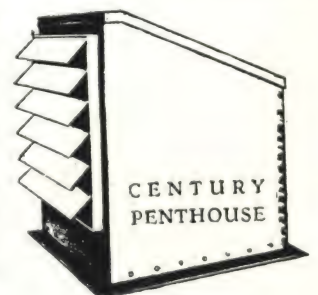
This is a combination power and gravity ventilator. When motor is off it can be used as a plain gravity ventilator. This unit is ideal for industrial buildings and conditions requiring mechanical ventilation, also lodge rooms where a large volume of exhaust is occasionally required. Motors are fully enclosed and specially designed for this application. Equipped

with the most efficient type of cast aluminum fan.

Neck diam., in.	Motor r.p.m.	C.f.m.	Hp.	Overall in.		Ga. galv.	Oz. copper
				Width	Height without base		
12	1750	900	1/8	20	24	24	18
	1150	600					
18	1750	2000	1/8	29	28	22	20
	1150	1400					
24	1750	4500	1/2	40	36	22	20
	1150	3500					
30	1150	6000	1/2	46	42	22	24
	860	4500					
36	1150	8500	1 3/4	54	45	20	24
	860	7200					
42	1150	10500	1 1/2	68	48	18	28
	860	8500					
48	860	12500	2	78	48	18	28
	680	10000	1 1/2				

The Century Fan Penthouse

This penthouse has the same capacity as shown for the Century Fan Ventilator at left. The automatic louvers close tightly when the motor is shut off preventing escape of air from the building. Louvers can only open when fan is operating. Copper or galvanized to fit any duct size.



W. F. HIRSCHMAN CO., INC.

MAIN OFFICE
BUFFALO, N. Y.

Manufacturers of Roof Ventilators and Allied Apparatus

WORKS
LEROY, N. Y.

BOSTON, MASS., 143 Federal Street

NEW YORK, N. Y., 202 East 44th Street

ELECTRIC VENTILATORS

EFFICO WIND-ELECTRIC

F FAN

ISOLATED F FAN

LORNATE FAN

LEROY FAN

ROTARY WIND-DRIVEN VENTILATORS

EFFICO ROTARY BALL BEARING

EFFICO SKYLIGHT BASE

LOUVER UNIT VENTILATORS

EFFICO

L-U

STATIONARIES

FIRMA

S-E

LORNATE

STANDARDIZED ROOF BASES

AUXILIARY EQUIPMENT

ELECTRIC DAMPER CONTROL

SELF-CLOSING DAMPER

THERMOSTAT DAMPER and FAN MOTOR CONTROLS

ELECTRIC MOTOR CONTROL

SELF-LOCKING DAMPER

LOUVERS for INTAKE and RECIRCULATION

DOUBLE SHELL STEEL VENTILATOR AND SKYLIGHT CURBS

EFFICO WIND-ELECTRIC VENTILATOR

Exhausts, Wind or No Wind

(FULL AUTOMATIC)

Selecting a Ventilator

When the wind is blowing sufficiently to drive the wind turbine, and remove the desired amount of air from the building being ventilated, the electric motor in ventilator is still. Instantly, when the wind turbine moves below previously determined revolutions, the electric fan carries the load, starting automatically and runs until the wind again drives the wind turbine.

The electric motor is cut off and on automatically.

Static Pressure—Motor and fan can be supplied to pull against $\frac{1}{8}$ -in. static resistance by the employment of motor only, or motor and wind turbine. This will have no deteriorating effect on using apparatus for regular ventilating purposes.

Many Valuable Features

This ventilator has every feature possessed by the Effico Wind-Driven Head. Every feature of the Effico Internal Louver Ventilator. Also possessing the added wonderful requisite of exhausting a given volume of air always. (Wind or no wind.)

Master Ventilator (Hirschman Method)

An installation need only comprise one Automatic Ventilator, the other ventilators may all be controlled by this Master Ventilator, also fresh air and recirculating dampers, supply fans, etc., can be controlled automatically by this Master Ventilator, and is adjustable to other capacities after installation.

Self-contained Unit Construction

The Effico Wind-Electric Ventilator comprises the wind turbine, and remove the desired amount of air from the building exhaust unit.

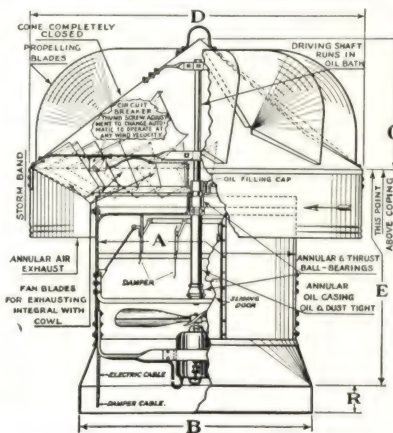
DIMENSIONS AND CAPACITIES OF EFFICO WIND-ELECTRIC VENTILATORS

Nominal ventilator size in inches	Dimension in inches (see diagram)					Thickness of metal				Motor H.p.	Cubic feet of air exhausted per minute at 0-5 miles per hour wind velocity	Temperature difference in degrees Fahr. between air in building and outside air 0°-10° 10°-20° 20°-30°	
	A-Actual size of ventilator	B-Base	C-Height of blades	D-Dia. of storm band	E-Height to blades	Gage G. I.		Oz. copper					
						Cowl	Base	Cowl	Base				
12	14	20	8	21 $\frac{1}{4}$	32	24	22	14	16	1/30	440	515	560
18	19	26	10	28 $\frac{1}{2}$	32	24	22	16	18		850	950	1040
24	25	38	14	40	35	24	20	16	18		1600	1780	1900
30	31	40	14	50	37	24	20	18	20	2300	2690	2900	
36	37	44	18	60	40	22	18	18	24	1/6	3400	3810	4100
42	43	50	22	68	46	22	18	20	24		4500	5010	5500
48	49	56	24	76	46	22	18	20	24		5900	6700	7400
54	55	62	24	86	46	22	18	24	24	1/4	7300	8450	9500
60	60	66	24	98	50	22	18	24	24		9300	10600	11900
72	72	80	30	114	50	20	16	24	24		13500	14600	16000
84	84	92	40	130	50	20	16	24	32	1/2	18000	21000	23000
96	96	116	45	153	50	20	16	24	32		1	22500	27000	29000

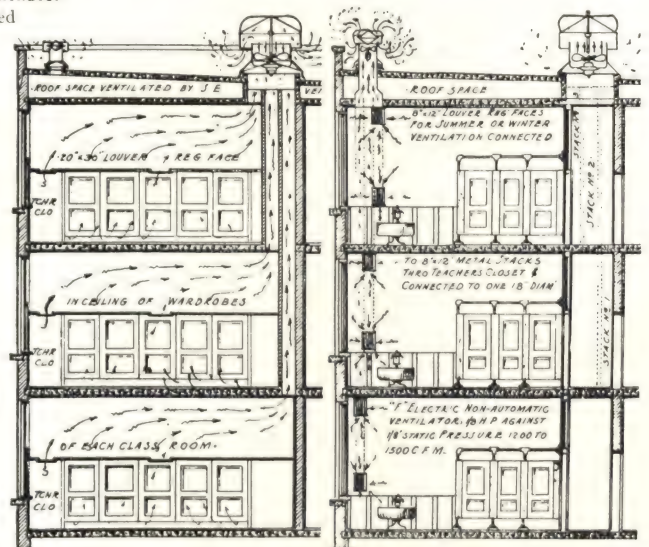
R dimension—5 in. on all sizes.

C dimension should be above coping.

For Wind Driven Rotaries, see page following.



Details of Effico Wind-Electric Rotary Ball Bearing Ventilator
Patented



Sections Showing Typical Arrangement

Effico Wind-Electric Ventilators exhausting from classrooms, F electric ventilators exhausting from toilet rooms and S-E Ventilators exhausting from attic spaces

EFFICO ROTARY BALL BEARING VENTILATOR WIND DRIVEN

Effico Rotary Ball Bearing Roof Ventilators

Construction and Principle of Operation

The Effico rotating cowl exterior is covered by wind propelled blades; interior by suction blades. There are no moving parts. Effico shaft rotates on ball bearings, fitted with clock precision in solidly enclosed dust-tight and oil-tight housings, and flooded in inches of non-freezing oil (furnished by us); no oiling required for years (proven), but we oil flood them as an extra precaution, and the Effico is absolutely noiseless. No drip pans or bird screens are needed.

Cost

Effico Ventilators exhaust more air per-dollar-cost of installation. The wind (only) driven heads exhaust greater volumes and during lower winds, thus a greater capacity within a given period. Effico Wind-Electrics, of course, are 100% constant. See first page of our catalogue.

EFFICO INTERNAL LOUVER VENTILATOR

Effico Internal Louver Unit Ventilator (Very Low Height)

The Effico Internal Louver Unit comprises the Effico Rotary Ball Bearing Ventilator Head constructed with a specially short base, neck and tight fitting access door. In this base is built a circular multiple blade louver damper. The damper is carefully balanced and heavily constructed. The blades lap and are fitted in a circular frame. It is adaptable for manual control, or thermostatic control system.

The roof base and the ventilator head are connected by means of an internal ring and cap screw connection which gives solidity. Specifications—see our page 6.

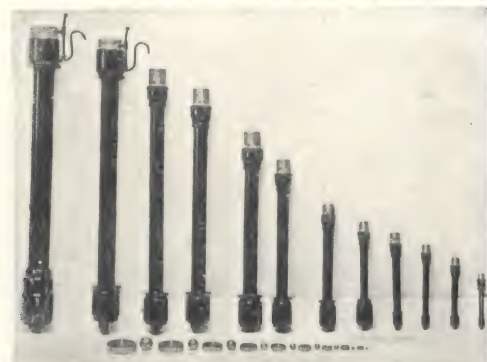


Typical Effico Louver Unit Installation

EFFICO LOUVER UNIT AND EFFICO STANDARDIZED VENTILATOR
DIMENSIONS AND CAPACITIES
Guaranteed and Conservative

Dimensions in inches						Ga. Gal.	Oz. Cop- per	Cubic feet of air exhausted per minute																
								Wind velocity, miles per hour																
						5 M.p.h.		10 M.p.h.																
						Temperature difference in degrees Fahr. in building and outside																		
A	B	C	D	E	F	Cowl Neck & base	Net weight lb.	Cowl Neck & base	0				10				20				30			
6	9	9	13	...	20	26	14	14	350	440	515	560	430	525	600	625	...	...	...	...	...	...		
*10	9	9	16	...	26	26	14	14	600	850	950	1040	910	1050	1200	1300	...	...	...	...	...	...		
*12	11	8	21	23	...	24	24	14	14	1600	1780	1900	1490	1900	2100	2300	...	...	...	...	...	...		
*18	11	10	28	23	22	24	24	190	2300	2690	2900	2300	3210	3490	3600	...	...	...	...	...	...	...		
*21	16	14	40	26	30	22	22	140	3400	3810	4100	3250	4200	4720	5050	...	...	...	...	...	...	...		
*30	22	14	50	28	36	22	20	190	4500	5010	5500	4390	5700	6300	6800	...	...	...	...	...	...	...		
*35	24	18	60	30	42	22	18	230	5900	6700	7400	5900	7900	8900	9050	...	...	...	...	...	...	...		
*42	33	22	68	38	48	22	18	3150	7300	8450	9500	7850	9900	11000	11500	...	...	...	...	...	...	...		
*48	34	24	76	38	54	22	18	4000	9300	10600	11900	9200	12500	14000	14500	...	...	...	...	...	...	...		
*51	35	24	86	38	60	22	18	5100	11200	12250	13400	10800	14250	15800	16750	...	...	...	...	...	...	...		
*61	37	24	98	38	66	20	18	6500	13500	14600	16000	13000	17000	19000	20000	...	...	...	...	...	...	...		
*65	43	30	103	44	72	20	18	8100	1500	1600	1700	1400	1800	2000	2100	...	...	...	...	...	...	...		
*72	50	30	114	48	80	20	18	9800	1800	2100	2300	2000	2250	2700	2900	...	...	...	...	...	...	...		
*81	54	40	130	48	92	18	16	10500	2250	2700	2900	2900	3280	3550	3550	...	...	...	...	...	...	...		
96	54	45	153	60	116	18	16	...	2432	16000	22500	27000	29000	32800	35500	...	...	...	...	...	...	...		

For round bases, "E" dimension remains the same. *Louver units are furnished in these sizes. Dimension "C" should be above coping.



Effico Oil Flooded Dust and Acid Proof Bearing Housings

Great Air Volume Exhaust at Low Wind

All Efficos will draw considerable air at a 1-mile breeze (an apparent calm) without stack or heat assistance. Cowl outlet is over 50% larger than its stack area, which is ample, as no wind enters ventilator to gain the so-called siphonage effect. Suction fan is same size as rotating cowl (note dimension chart). Thus each Effico is equipped with fan over 50% greater in diameter than its stack area. Fan pulls air up stack at even the slowest turning movement and wind blowing across the outlet adds to its efficiency.

Corrosion Protection

Interior fabrication members are rustproofed by Parker Process.

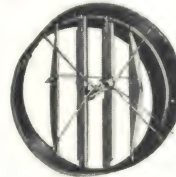
Symmetry

The Effico has artistic lines and pleasing appearance. Lowest in height of rotary ventilators by over 50% average. Note dimension chart.

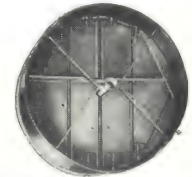
Specifications—See our page 6.

Effico Louver Dampers

Made of stretcher leveled sheet steel. Hirschman Electric Damper Control or pneumatic damper motor is supplied and installed with these units unless not desired. See page 6 of our catalogue for controls.

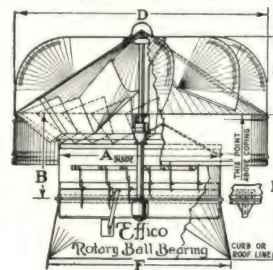


Open



Closed

Multiple Circular Louver Damper in Neck of Ventilator



Patented

Effico Internal Louver Unit Ventilator

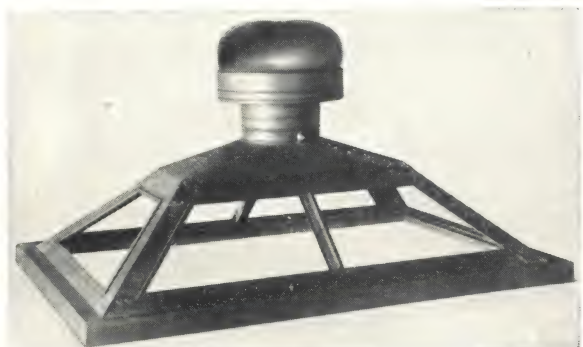
Effico Skylight Ventilator Base (Puttyless)

The Effico Skylight Ventilator Bases have a glass area at least equivalent to their roof area. Rain in and blow in are entirely eliminated. No swinging sash to operate, and the ventilation is perfect. Serves the dual purpose of giving real ventilation and allowing daylight into the building, one opening in the roof serving both purposes.

Standard Skylight Curb Dimensions—3x3 ft.; 3x4 ft.; 3x6 ft.; 4x4 ft.; 4x6 ft.; 4x8 ft.; 4x10 ft.; 6x6 ft.; 6x8 ft.; 6x10 ft.; 6x12 ft.

Application—Any Hirschman Company Ventilator can be fitted to our Skylight Base.

Specifications—See page 6 of our catalogue.



F FAN VENTILATOR—NON-AUTOMATIC

Design—Appearance—Construction

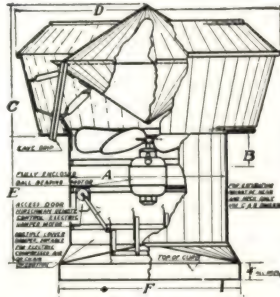
Strength (sturdy construction), weatherproofness, and appearance are given consideration in the design of this ventilator.

For free air or as a pressure blower is decidedly an apparatus of high merit.

Exhaust Head

The design is such that air driven 1200 ft. velocity through the head, registers only .032 in. water gauge static pressure. This is unequalled by any other known shape. Thus for a fan or exhaust head, it is unequalled. When so used and the fan is cut off the ventilator still ventilates as a syphon ventilator. There are no shutters to blow or freeze shut.

Head only may be purchased for use as outlet for large fan discharge.



F Fan Ventilator (Electric)
Showing Electric Damper
Control
(Patented)

Recommendation

A high class ventilator where a high exhaust velocity against resistance is required. Where the Effco Rotary Head, or the Effco Wind-Electric Automatic Ventilator, due to obstructed location or moderate even capacity, is not adaptable, then we recommend the F Fan Ventilator.

Adaptable for Public Lavatories, Bakeries, Hotel and Restaurant Dining Rooms and Kitchens, Chemical Laboratories, Industrial Plants, Projection Rooms in Theatres and in all places for the exhausting of fumes, dust, gases, excessive heat or steam.

CAPACITIES HIRSCHMAN F ELECTRIC VENTILATORS

Size of stack, in.	Fan speed, r.p.m.	Horse-power	Capacities—c.f.m. static pressure in inches of water				Type of motor	Shipping weight, lbs.	O-quiet X-silent
			1/8 in. or less	1/4 in.	3/8 in.	1/2 in.			
10	1750	1/50	250				S.D.	100	X
12	1750	1/20	725	400			S.D.	100	O
	1150	1/50	250				S.D.		X
18	1750	1/8	1500	900			S.D.		O
	1100	1/6	1500	900	520	200	S.D.		X
	850	1/20	820				S.T.D.		X
							S.T.D.		X
24	1100	1/4	3000	2200	1600	1000	S.D.		O
	1700	1	4800	4200	3800	3000	S.D.	270	—
	1100	1/8	4000	3200	2350	1700	S.D.	225	—
	825	1/2	2600	1500	920		S.T.D.		—
30	1080	1/2	5000	4000	2700		S.D.	300	—
	720	1/8	4800	3800	2700	1900	T. S.		O
	900	1	6700	5600	4100	3100	S.D.		O
36	1080	2	8500	7600	6600	5400	S.D.	475	—
	900	1 1/2	7300	6000	5000	3900	S.D.		O
	680	1	5000	3500			S.T.D.		X
42	680	1 1/2	8000	6250	4800	3500	S.D.	525	O
	780	1 1/2	7800	6500	5400	4000	T. S.		—
	1080	2 1/2	10700	9700	8650	7700	S.D.		X
	465	1	7700	4800	2600		S.T.D.		X
48	365	1	10000	7000			S.T.D.	700	X
	680	1 1/2	10000	8000	6400	4500	S.T.D.	700	O
54	365	1 1/2	14000	7800			S.T.D.	780	X
	465	2	16000	12000	7500		S.T.D.		O
60	520	5	22000	18000	16000	13000	S.T.D.	860	O
	440	2	16000	12000			S.T.D.	800	O

*These capacities marked O and X are not maximum, but are based on silent requirements for public and semi-public buildings.

All capacities based strictly on A.S.H.V.E. code.

Prefix letters in motor column indicate kind of current for which the motors are available.

Alternating—S, single-phase, two-or-three-phase, 60 cycle. T, single-phase, two or three-phase, 25 cycle. D, direct-current.

The low speeds are suitable for schools, theatres, auditoriums and other quiet running requirements.



Isolated F Fan Ventilator
Patented and
Patents Pending

Isolated F Fan Ventilator

A power ventilator of same characteristics as the "F," except having the isolated motor. Also furnished with double and triple isolated shell for extreme fire conditions and code requirements. Explosion proof motors furnished if required.

Also used for extreme conditions which might deteriorate motor. Note perfect ventilation of motor chamber which may also be equipped with fixed yet removable weather deflecting louvers when so required to enclose motor chamber.

DIMENSIONS OF HIRSCHMAN F VENTILATORS

Dimensions, in inches					Thickness of metal			
A	C	D	E	F	Ga. galvan.		Oz. copper	
					Head	Base	Head	Base
12	9 1/2	22	24	16	24	24	16	16
18	14 1/4	32	24	22	24	24	16	16
24	18	42	30	30	24	22	16	18
30	22 1/2	52	30	36	22	20	18	20
36	27	61 1/2	30	42	22	18	20	24
42	31 3/8	71	36	48	20	18	20	24
48	36	81	36	54	18	18	20	24
54	39 3/4	91	36	60	18	18	20	24
60	45 1/4	101	36	66	18	16	24	24
66	52	110	36	72	18	16	24	32
72	60	120	36	78	18	16	24	32
84	65	140	36	92	18	16	24	32

Specifications—See Page 6 of Our Catalogue.

Bases—Supplied with or without bases.

Dampers—See pages 2 and 6 of our catalogue.

S-E AND L-U ROOF VENTILATORS

The S-E is a very high grade stationary type syphon ventilator. It starts exhausting at slightly over a two-mile wind without any temperature difference. Capacities shown in chart are conservative.

Specifications on Page 6 of Our Catalogue.



L-U Ventilator

L-U Ventilator consists of an S-E Ventilator Head constructed with a specially short base and neck. In this neck is built a circular multiple blade louver damper.

DIMENSIONS AND CAPACITIES OF HIRSCHMAN S-E AND L-U VENTILATORS

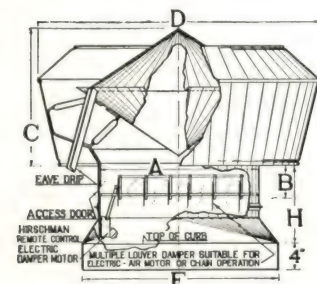


Diagram of L-U Ventilator
Patented

Two apparatus in one. Illustration shows electric control in position

Dimensions in inches See diagram—at the left						Thickness of metal				L-U wght. crated	S-E wght. crated	Cubic feet of air exhausted per minute Wind velocity, miles per hour							
												5 M.p.h.				10 M.p.h.			
A	B	C	D	F	H	Ga. Galv.		Oz. copper		Temperature difference in degrees Fahr. in building and outside									
						Head	Base	Head	Base	0	10	20	30	0	10	20	30		
12	4	8	19½	16	12	26	26	14	16	80	30	215	290	330	380	270	360	460	525
18	4½	12	29	22	12	24	24	14	16	110	50	475	610	740	830	590	717	950	1050
24	5⅝	15¾	36	30	12	24	22	16	18	150	75	850	1090	1315	1500	1035	1400	1675	1800
30	6	18¼	42	36	18	22	20	18	20	175	110	1320	1700	2060	2335	1625	2200	2600	2800
36	6	22½	52	42	18	22	22	18	20	200	150	1900	2450	2970	3370	2350	3160	3700	3900
42	7	27	61½	48	18	20	18	18	20	260	200	2585	3325	4025	4580	3200	4300	5000	5300
48	7	31⅝	71	54	18	18	18	18	24	300	270	3375	4350	5260	5980	4150	5390	6500	7000
54	8	36	81	60	18	18	18	24	24	360	300	4275	5500	6650	7650	5250	7200	8300	8800
60	8	39¾	91	66	18	18	18	24	24	420	350	5250	6800	8220	9350	6500	8000	9200	10000
66	10	45½	91	72	18	18	18	24	24	490	400	6325	8200	9950	1140	7800	10600	11500	12100
72	10	45¼	101	78	18	18	18	24	24	520	450	7600	9750	11870	13500	9350	12700	14000	15000
84	10	65	101	92	18	18	18	24	24	600	500	10300	13200	16100	18400	12650	17400	19000	22000

Note: We furnish square and rectangular shapes as well as the conventional round shape.

LEROY ELECTRIC FAN VENTILATOR

Design—Appearance—Construction

This ventilator has been manufactured by us for over 10 years. It is a low priced electric ventilator and is 80% as efficient as our "F" Electric Ventilator.

This ventilator is constructed of high grade materials only and workmanship is first class as in all other Hirschman products.

Capacities

For power capacities use "F" Electric capacities as shown on opposite page less 20%. For capacities as a syphon ventilator without motor running use our Firma capacities as given below.

For a pressure exhaustor of over 1/4-in. static we recommend our "F" Electric

Ventilator as described on page 3. For industrial application where noise is not the determining factor, considerably increased capacities can be furnished.

This ventilator may be furnished with or without base or damper, and damper, if furnished, may be controlled by chain or by our electric damper control, also controlling fan motor, etc. These controls are all described on page 6.

LeRoy Isolated Electric Ventilator

The motor in this ventilator may be had in the isolated motor drum section as shown on the opposite page.

Specifications—See page 6.



FIRMA (Stationary) VENTILATORS

Equipment that can answer today's insistent demand for "Lowest First Cost" engages every alert Architect and Engineer and Contractor as never before, particularly if it answers a need for better service and longer life. The Firma Ventilator reflects these facts.

It is a high-grade ventilator, low in cost, highly efficient, correct in design and properly manufactured. A tested product of seventeen years' standing, guaranteed by us under our Warranty Bond (if sold under the bond) from date of installation against all imperfections in workmanship or materials.

A ventilator designed to give exhaust efficiency at low wind velocities. Heavy gauges of metal are used. All steel bracing irons are Parker rustproofed. All rivets have washers on burred side. Its automatic exhaust capacity is effective at a wind velocity of two miles per hour or more. For exhausting excessive heat, fumes, etc., Firma Ventilators have proven their worth. Installed on public buildings and industrial plants, etc., in most every state in the Union, and has the approval of all United States Departments, and of leading architects and engineers.

Firma Stationary Ventilators are also built in square and rectangular shapes for those desiring those shapes. In the case of square ventilators, dimension C as given on the table for circular ventilators will remain the same.

Dampers—See pages 2 and 6 of our catalogue.

Firma Knocked-Down

Shipped knocked-down, if desired, to any part of the country—a completely manufactured job, ready for quick assembly. If bonded, each ventilator is inspected to qualify after installation.

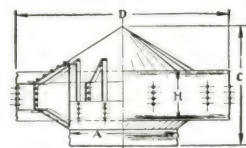


Diagram of Firma Ventilator

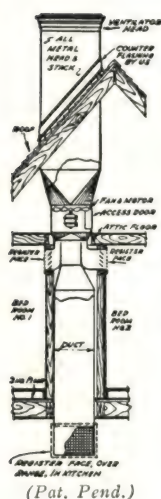
LEROY ELECTRIC AND FIRMA VENTILATOR CAPACITIES AND SIZES
Certified Capacities

Size, in.	Capacities at 5 m.p.h.		Dimen., in.			Oz. copper		Gauge galv.	
	Wind. 10° F. temp. diff.	Wind. 30° F. temp. diff.	B	C	D	Neck	Storm band and cone	Neck	Storm band and cone
6				8 1/2	11	14	14	26	26
8				8 1/2	14	14	14	26	26
10	170	225	24	9	17	14	14	26	26
12	260	325	24	11	21	16	14	24	26
14	335	440		14	25	16	14	24	26
16	440	580		18	30	18	14	24	24
18	555	730	36	18	30	18	14	22	24
20	685	900		20	36	18	16	22	24
24	985	1300	42	21	43	18	16	22	24
30	1540	2030	48	25	52	20	16	20	22
36	2215	2930	60	30	60	24	16	18	22
42	3015	3980	72	38	72	24	18	18	22
48	3940	5200	72	38	82	24	18	18	22
54	4985	6585	72	44	82	24	18	18	22
60	6155	8130	78	58	102	24	20	18	20
66	7400	9900		60	102	24	24	18	18
72	8900	12000		60	120	24	24	18	18
84	12000	16000		72	144	32	24	18	18
96	16000	21000		78	168	32	24	18	18

For power capacities for LeRoy Electric Ventilators, see "F" Electric capacities less 20%.

LORNATE CONCEALED VENTILATORS

SYPHON OR ELECTRIC



This is the most conventional air exhaust outlet; is suitable for any type of architecture; is strictly weatherproof. Available as a syphon head or as an electric ventilator. It is made in any size; square, rectangular, or round. For brick or stone flue, we supply metal waterproof concealed head. For all metal flue, the head and stack above roof is furnished by us.

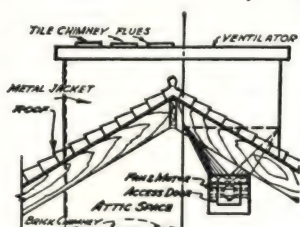
Write for booklet describing many designs and their applications.

Lornate Electric Attachment

All designs are furnished as electrics if required. Motor housing is supplied in vertical and horizontal drives, complete with special quiet running motors. Motors are either rubber or spring

mounted. Canvas duct connections are supplied if required. Large sizes have V-belted fan reduction drives.

Exhaust Capacity and Static Pressure



flue velocity. A. S. H. & V. E. Code.

The Lornate Syphon Ventilator in 10° temperature difference, five (5) mile wind, for two-story building, exhausts 200 f.p.m. flue velocity.

The Lornate Head when used as an exhaust head for fan discharge develops .125 in. water resistance at 800 ft.



Capacities (Quiet Operation)

The Lornate Electric Ventilator for silent operation (sleeping rooms). Engineers please estimate 600 f.p.m. flue velocity. Quiet operation (schools, hospitals) 750 f.p.m. Other requirements (institutions, attics, isolated location) 800-1000 flue velocity. Capacities are based upon quiet operation, not maximum possibilities.

Specifications—See page 6 of our catalogue.

LORNATE ELECTRIC VENTILATOR CAPACITIES

Please select flue velocity to determine sizes

Hp.	Static pressure in inches of water			X—Silent O—Quiet
	⅛ in.	¼ in.	½ in.	
	Capacities in cubic feet per minute			
1 ₃₀	400	200		O
1 ₂₀	500	250		X
1 ₁₆	1000	800		O
1 ₁₆	1500	900		O
1 ₁₄	2000	1400	1000	X
1 ₁₄	3000	2200	1000	O
1 ₁₂	4000	3200	2200	O
1 ₁₂	5000	3500		X
3 ₄	6000	5000	2900	O
1½ ₂	8000	6000	3400	O
2	10000	7000	4500	O
2½	12000	9000	7000	O
3	15000	12000	6000	O

HIRSCHMAN STEEL CURBS

SINGLE AND DOUBLE SHELL—FOR VENTILATORS AND SKYLIGHTS

Hirschman Steel Ventilator and Skylight Curbs
For Decks of Concrete, Wood, Steel and Gypsum

Their light weight reduces roof load by many tons on concrete buildings.

Installation—For concrete deck, place Hirschman Steel Curb in desired position, pour concrete around it (the curb acts as a form and re-enforcement); no other form is needed.

Hirschman Steel Curbs Comprise—Anchor for

ventilators. Lock for roof felt-flashing. 45-degree cant for roofing felt around opening. Smooth correct size opening with finished corners and edges. Re-enforcement for concrete. Thermal proof curb walls. Improved appearance to roof and ventilators. Reduced cost of ventilator bases and installation.

DIMENSIONS AND GAUGES FOR
VENTILATOR CURBS

Vent Size A	Curb Size BxH (opening)	Gauge Steel
12	16x16	22
18	22x22	22
24	30x30	22
30	36x36	22
36	42x42	18
42	48x48	18
48	54x54	18
54	60x60	18
60	66x66	18
72	80x80	18
96	116x166	16

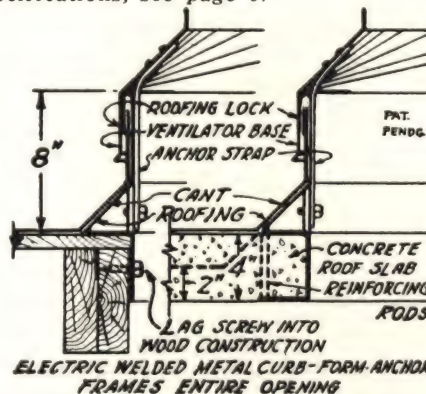
Style A Double Shell—Not illustrated, has 1 in. thick walls, which are mineral wool packed. Style B Curb illustrated.

Type AC for Concrete; Type AS for Steel or Type AW for Wood construction.

Standard height above roof, 8 in. for snow belt locations 12 and 15-in. heights can be furnished.

Specify Hirschman's Steel Curbs by style and type required.

For Specifications, see page 6.



HIRSCHMAN ELECTRIC DAMPER AND MOTOR CONTROLS

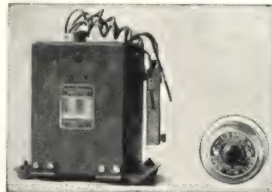
MANUAL OR THERMOSTATIC REMOTE CONTROL

The Hirschman Electric Control will operate any type of damper, round, square, rectangular, or multi-blade in either vertical or horizontal position, will control motor, louvers, etc., in any part of the building.

Requires no attention or oiling and is totally enclosed. This electric control is absolutely positive and holds the subject rigid in desired position and also makes it possible to so co-ordinate that fan motor cannot be operated when dampers are closed.

Two position control requires two or three wires. Three position control requires three or four wires between switch and apparatus, dependent on local conditions.

We manufacture multiple louver dampers, round or square. Also fire, self-locking, anti-back draft, self-closing dampers, etc.



Hirschman Electric Damper Control and Surface Mounted Hand Control Switch

Type M3—Three-position manual control, i.e., open, half open and closed.

Type M2—Two-position manual control, i.e., open and closed.

Type MT2—Two-position manual control with fan on in open position and off closed position.

Type MT3S—Three-position manual control with fan on or off when damper is open, i.e., damper open and fan on, damper open and fan off, damper closed and fan off.

Types UM3, UM2, UMT2, UMT3S—Are similarly operating controls as the foregoing, but when one switch is used to operate more than one unit.

Manual Controls

Thermostatic Controls

Type T3—Thermostat, three positions.

Type T2—Thermostat, two positions.

Type TT2—Thermostat opening damper and turning fan on and closing damper and turning fan off.

Types UT3, UT2, UTT2—Are similar to the above except that one thermostat is used to control more than one unit.



Thermostat



Flush Wall Mounted, Hand Operated Damper and Motor Control Switch Type MT3S

HIRSCHMAN DAMPERS

Dampers—All Hirschman Company Dampers, installed in ventilator or otherwise used, may be operated by chain, by Hirschman Electric or Pneumatic Controls, manual or thermostatically, if desired.

Self-closing Damper—"F" Electric, LeRoy Electric, Lornate, and Isolated "F" Electric Ventilators only, are if desired, equipped with the Hirschman Self-closing Damper which closes when fan stops.

Self-locking Device—Any ventilator may be equipped with Hirschman Self-locking Device if desired. Locks damper closed. (Only one chain needed.)

Fire Dampers—Fusing link can be supplied with any damper

to open or close in case of fire.

Louver Dampers—We are manufacturers and patentees of the Circular Multiple Louvers as installed in our Louver Unit Ventilators. See page 2.

We also manufacture intake, recirculating, mixing dampers, etc.

Hirschman Electric Ventilator Dampers in closing de-energize (shut down) fan motors.

Hirschman Anti-back-draft Damper—Micrometer adjustment on each damper permits very delicate balancing of each damper. Suitable for gravity or power exhaust. Recommended for troublesome air ducts.

SPECIFICATIONS FOR HIRSCHMAN PRODUCTS

Wind Electric Ventilators—(See page 1 of our catalog.) The roof ventilators to exhaust from () to be of the Effic Wind-Electric Ventilators (full automatic) as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. Of the sizes as shown on the plans. They shall be of (Gal. Toncan Iron) (Copper) of manufacturers standard gauges. Dampers for these ventilators shall be operated by (Hirschman Electric Damper Control. Note: See page 4 for type.) (Pneumatic motors as specified under temperature regulation) (Chain) controlled from location as selected by the architect.

Wind Electric Hirschman Master Control—(See page 1 of our catalog.) The roof ventilators to exhaust from () to be the Effic Wind-Electric Ventilators (non-automatic) except one ventilator marked Master Ventilator on the plans, which will be full automatic. This full automatic ventilator to control the fan motors in all the other ventilators. These ventilators, as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y., shall be of the sizes as shown on the plans. They shall be of (Gal. Toncan Iron) (Copper) of manufacturers standard gauges. Dampers for these ventilators shall be operated by (Hirschman Electric Damper Control. Note: See page 4 for type.) (Pneumatic motors as specified under temperature regulation) (Chain).

"F" Fan Ventilators—(See page 3 of our catalog.) The fan ventilators shall be of the sizes as shown on the plans, and shall have (round) (square) style bases. They are to be of (Gal. Toncan Iron) (Copper) of manufacturers standard gauges. The motors of .. r.p.m. .. hp. shall handle .. c.f.m. and operate on .. volts .. cycles .. phase current. They shall be the Hirschman (F Fan Ventilator) (Isolated Fan Ventilator) as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. Dampers for these ventilators shall be operated by (Hirschman Electric Damper Controls. Note: See page 4 for type.) (Pneumatic motors as specified under temperature regulation) (Chains).

LeRoy Electric Fan Ventilators—(See page 4 of our catalog.) The fan ventilators shall be of the sizes as shown on the plans, and shall have (round) (square) style bases. They are to be of (Gal. Toncan Iron) (Copper) of manufacturers standard gauges. The motors of .. r.p.m. .. hp. shall handle .. c.f.m. and operate on .. volts .. cycles .. phase current. They shall be the Hirschman (LeRoy Electric Fan Ventilator) (Isolated Fan Ventilator) as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. Dampers for these ventilators shall be operated by (Hirschman Electric Damper Control. Note: See page 4 for type.) (Pneumatic motors as specified under temperature regulation) (Chains).

Lornate Fan Ventilator—(See page 4 of our catalog.) The ventilators shall be of the sizes as shown on the plans, and as detailed in the drawings. They are to be of (Gal. Toncan Iron) (Copper). They are to operate absolutely silent, and handle .. c.f.m. at fan speed of .. r.p.m. Motors shall operate on .. volts .. cycle .. phase current. They shall be the Lornate Fan Ventilators as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. Damper for these ventilators shall be operated by (Hirschman Electric Damper Control. Note: See page 4 for type.) (Pneumatic motors as specified under temperature regulation).

Effic Internal Louver Unit Ventilators—(See page 2 of our catalog.) The roof ventilators to be of the sizes as shown on the plans and are

to be constructed of (Gal. Toncan Iron) (Copper). They shall be the Effic Internal Louver Unit Ventilators comprising heads, bases, multiple louver dampers, access doors, etc., all of standard design and construction as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. Bases to be of (round) (square) style and stack to be sufficiently high to elevate the propelling blades above the coping. Louver dampers in the necks of the ventilators to be operated by means of (Hirschman Electric Damper Control. Note: See page 4 for type.) (Pneumatic motors as specified under temperature regulation) (Chains for manual operation).

Effic Rotary Ball-Bearing Ventilators—(See page 2 of our catalog.) The roof ventilators of the sizes as shown on the plans are to be constructed of (Gal. Toncan Iron) (Copper) of manufacturers standard gauges. They shall be the Effic Rotary Ball-Bearing Ventilator as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. Bases of (round) (square) style of same gauge as the ventilator neck are to be sufficiently high to elevate the propelling blades above the coping.

L-U Louver Unit Ventilators—(See page 3 of our catalog.) The exhaust ventilator units for (syphon) (fan) exhaust shall be the Hirschman L-U ventilator units of sizes as shown on the plans, and shall be of the manufacturers standard gauges of (Gal. Toncan Iron) (Copper). Each L-U ventilator to be equipped with circular multiple louver damper to be controlled with (Hirschman Electric Damper Control. Note: See page 4 for type.) (Pneumatic motors as specified under temperature regulation) (Chain). Heads, bases, dampers and damper motors all to be completely assembled at the manufacturer's plant. They are to be the Hirschman L-U ventilator units as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y.

S-E Ventilators, Syphon Exhaust—(See page 3 of our catalog.) The roof ventilators of the sizes as shown on the plans are to be constructed of (Gal. Toncan Iron) (Copper) of manufacturers standard gauges. They shall be Hirschman S-E ventilators as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y. They shall be mounted on (round) (square) style bases of same gauges of metal as the necks of the ventilators.

Firma Stationary Ventilators—(This page.) The roof ventilators of the sizes shown on the plans shall be of standard manufacturers gauge of (Gal. Toncan Iron) (Copper). They shall be the Firma stationary Ventilators as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y., and shall be mounted on (round) (square) style bases of same metal gauges as the necks of the ventilators.

Effic Skylight Bases—(See page 2 of our catalog.) These ventilators to be equipped with Effic Skylight Bases of (Gal. Toncan Iron) (Copper) to fit over .. curbs. These skylights are to be of puttless construction and design as manufactured by the W. F. HIRSCHMAN CO., INC., Buffalo, N. Y.

Hirschman Steel Curbs—(See page 5.) The (roof ventilator) (skylight) (scuttle opening) Curbs shall be of double shell, steel construction, properly insulated, of proper sizes and of approved design. They shall be the Hirschman double shell steel curbs, Type (AC for Concrete) (AS for Steel) (AW for Wood) as manufactured by W. F. HIRSCHMAN CO., INC., Buffalo, N. Y.

KERNCHEN COMPANY

101 East Wacker Drive, CHICAGO, ILL.

FACTORY
SOUTH GARY, IND.

AGENCIES IN PRINCIPAL CITIES

Product

"K-S-V's" (KERNCHEN SIPHONAGE VENTILATORS).

Also Utility Ventilators (Plain Type).

"K-S-V's" Are Correct Siphons

The correct siphon is the most powerful pulling force known to this field of ventilation. It not only exhausts, but it pulls terrifically. Siphons harness the lightest air currents, compressing and compelling them to co-act in mightily increasing the suction of air out through ventilator.

Construction

Simplicity of construction and complete absence of the friction inevitably involved in old-style rotary mechanisms make the "K-S-V" (Kernchen Siphonage Ventilator) a troubleproof, lasting investment. Free area of outlet over 200% of pipe area. Nothing to choke or hinder. Friction at minimum, exhaust at maximum.

Eduction pipe is cylindrical with V-shaped notches or openings at top, each covered by a siphon tapered inwardly toward top, the total of four siphons being covered by a jacket of conical shape, whereby other siphons (four) are formed, greatly increasing the terrific pulling power. In addition, a top construction of two specially designed hoods is used, augmenting considerably the pulling force and making the unit stormproof.

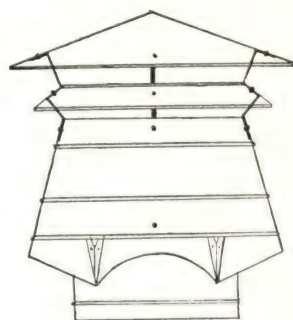
Absence of friction, no revolving mechanism being present, means silent performance, nothing to wear out, nothing flopping around, no maintenance cost. A rotary requires a certain wind energy to swing it around *before it gets ready to ventilate. The "K-S-V" uses this wind energy to ventilate.*

Materials

Furnished in all standard gauges and in any size. Made of any metal desired, such as galvanized steel, Keystone copper steel, Armco iron, Toncan metal, cold rolled copper, aluminum, zinc, monel metal, wrought iron, etc. Furnished with or without base damper or condensation arrestor.

A Partial List of Corporations Using "K-S-V's"

Railroads all over the country
U. S. Steel Corporation
Republic Iron & Steel Co.
Carnegie Steel Co.
Standard Oil Co.
Buick Motor Co.
Pullman Co.
Studebaker Corporation
American Can Company
Continental Can Company
Packard Motor Car Company
Ford Motor Car Company
Ajax Forge Co.
International Harvester Co.
Jones & Laughlin Steel Co.
National Cash Register Co.
American Car & Foundry Co.
Western Electric Company
Barrett Mfg. Company
Willys Overland Company
Thompson-Norris Paper Company
Armour & Company
Swift & Company
Sears, Roebuck & Co.
Montgomery Ward & Co.
General Chemical Company
Marathon Paper Company
Bryant Paper Company
Grays Harbor Paper Co.
Crown Willamette Paper Co.
Churches and Hospitals



"K-S-V" Drawn to Exact Proportion

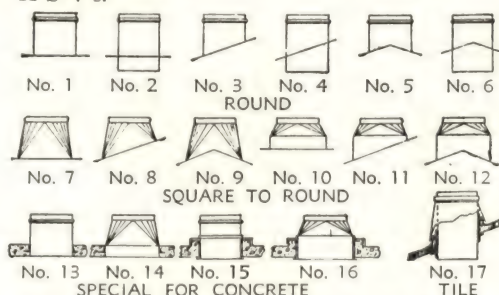
Special Ventilation Service

The KERNCHEN COMPANY specializes in ventilation and its engineers are always available, gratis. Particular attention given to difficult or unusual problems involving great heat as well as temperatures below freezing point, steam conditions; elimination of condensation, moisture, fumes, gases or smudge, foul or vitiated air, in every type of building or room.

Specifications

Roof ventilators and bases to be "K-S-V's" as manufactured by the KERNCHEN COMPANY, 101 East Wacker Drive, Chicago, Illinois, in the following sizes (specify sizes by neck diameter and bases, by number, and roof pitch in inches per foot).

Caution—Beware of imitations and infringements; protect yourself by specifying "K-S-V's."



Bases for Standard Installations of "K-S-V's" (Kernchen Siphonage Ventilators)

OFFICIAL TESTS

Nothing is more deceptive than irresponsible theoretical tests. Exaggerated performance figures will appear to be justified at times by laboratory tests conducted under conditions which are more favorable than those found in actual service. It is only when laboratory and field tests agree, that the results can be taken as conclusive.

Note particularly the consistent figures in the two accompanying tests by national authorities, one conducted in the laboratory, the other on the Leader Building installation in Cleveland, Ohio.

OFFICIAL TEST OF "K-S-V's" (KERNCHEN SIPHONAGE VENTILATORS) CONDUCTED BY ARMOUR INSTITUTE OF TECHNOLOGY, CHICAGO

Showing Exhaust Under Different Wind Velocities, and Which Scientifically Proves the Terrific Pulling Power and 100% to 300% More Efficiency Than That of Other Ventilators

Wind velocity miles per hour	Air pulled through ventilator, lineal ft. per min.	Cubic feet air pulled through ventilator							
		Size of ventilator, in.	12	18	24	30	36	42	48
5	460	Per hr.	21,840	48,852	86,640	135,000	194,820	269,100	346,560
10	670	Per hr.	31,500	71,160	126,180	196,800	283,800	391,980	504,720
15	960	Per hr.	45,240	101,940	180,840	282,000	406,620	561,600	723,360
20	1,220	Per hr.	57,420	129,540	229,800	358,800	516,780	713,700	919,200
25	1,480	Per hr.	69,660	157,140	278,820	435,000	626,880	865,800	1,115,280

Case School of Applied Science—Test Nov. 6, 1913, on Roof of Leader Building, Cleveland, Ohio

Armour Institute of Technology—Test April 17, 1911, in Laboratory

15 inches	Diameter of ventilator	15 inches
5.32 miles per hour, or 6% % stronger than Armour's	Velocity of outside wind	5 miles per hour
497	Velocity of air pulled through ventilator per min., lineal ft.	460
610	Exhaust of ventilator per min., cubic ft.	564
Outside temperature, 67° Fahr.	Inside temperature, 85.8° Fahr.	

(Signed)

Head of Mech. Eng. Dept.,
Case School of Applied Science

Mech. Engrs., Armour Institute of Technology

Note: We challenge all to furnish such authentic unbiased and official tests as conducted and signed by three institute of technology professors.

MILCOR STEEL COMPANY

MILWAUKEE, WIS.

CANTON, OHIO

CHICAGO, ILL.

KANSAS CITY, MO.

LA CROSSE, WIS.

For Our Catalogues on Milcor Fireproof Products, Skylights, Access Doors, Steel Ceilings and Steel Decks, see File Index

MILCOR VENTILATORS

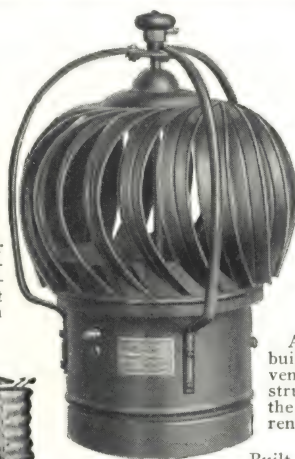


Milcor Nu-Air

Construction of the Milcor Nu-Air Ventilator is shown in the smaller view at the right. Arrows indicate direction of air currents

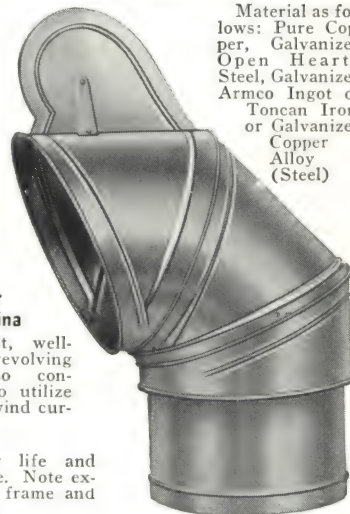


Ventilator Bases to be manufacturer's standard design to fit roofs as shown on plans



Milcor Turbine

Built for long life and satisfactory service. Note exceptionally strong frame and blade construction



Milcor Nu-Alpina

An efficient, well-built syphon revolving ventilator, so constructed as to utilize the slightest wind currents

Material as follows: Pure Copper, Galvanized Open Hearth Steel, Galvanized Armco Ingot or Ticonic Iron, or Galvanized Copper Alloy (Steel)

Milcor Nu-Air Ventilator

Description—Rigidly built, scientifically designed to create upward suction of air within the flue regardless of wind direction. Outer air currents rush in between the weather band and curved deflector. Currents travel upward and outward, constantly discharging a full volume of impure air through the ventilator shaft. Furnished with steel or glass top. Suitable for factories, industrial plants, schools, hospitals, air ports, homes, etc.

Sizes, in.	Weights, lb.	Capacities
8	10	12,000
10	15	15,000
12	20	21,000
14	25	29,700
16	40	39,000
18	45	48,600
20	55	60,000
24	80	87,000
30	120	135,000
36	175	210,000
48	250	300,000

Milcor Turbine Ventilator

Description—The slightest motion of air is sufficient to operate the Milcor Turbine Ventilator. A vacuum is created as soon as the head begins to revolve because the air within the head is expelled by centrifugal force. Actually pulls out the impure air automatically, continuously and silently. Down drafts a mechanical impossibility. Strong frame work. Equipped with Alemite fittings and when once installed requires no attention, care or adjusting.

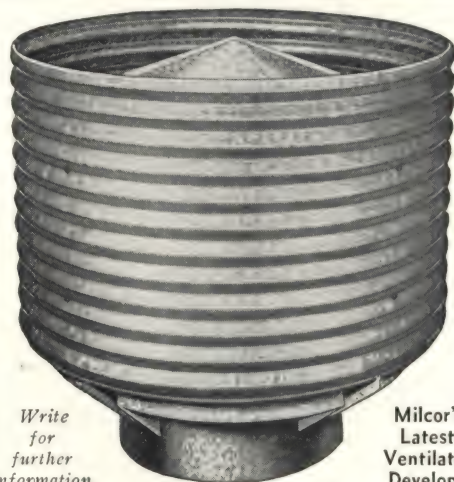
Sizes, in.	Weights, lb.	Capacities
8	20	17,300
10	27	26,500
12	38	38,600
15	50	54,000
18	85	85,200
20	100	105,100
24	160	149,000
30	225	225,000
36	270	281,000
42	460	324,000
48	550	360,000

Milcor Nu-Alpina Ventilator

Description—Entire revolving head of this ventilator constantly faces away from the wind. A vacuum is thus created which adds to the syphonating power of the wind currents entering the opening at the bottom of the revolving head. Staunchly constructed and rigidly braced. Nothing lighter than 26-gauge galvanized steel is used in fabrication. It has a cast bronze ball race with solid brass ball bearings, and is painted with a heavy coat of aluminum.

Sizes, in.	Weights, lb.	Capacities
8	25	12,500
10	27	15,000
12	40	17,500
14	50	23,500
16	60	32,000
18	75	41,000
20	125	51,000
24	175	70,000
30	300	107,000
36	400	160,000
48	550	280,000

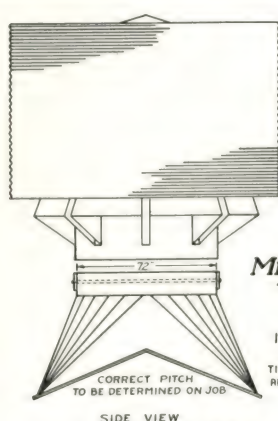
Capacities Indicate Cubic Feet of Air Discharged per Hour; Wind Velocity 5 Miles per Hour



Write for further information

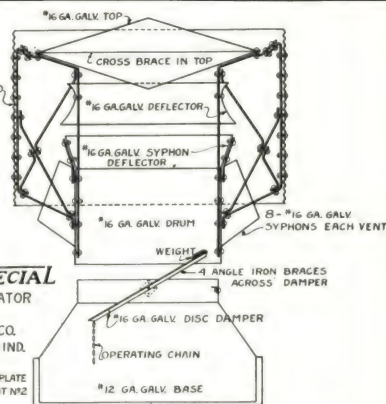
Milcor's Latest Ventilator Development

MILCOR Special



SIDE VIEW

MILCOR SPECIAL
72 INCH VENTILATOR
USED BY
INLAND STEEL CO.
INDIANA HARBOR, IND.
ON
TIN MILL, UNIVERSAL PLATE
AND STRIP MILL - PLANT #2



CROSS SECTION

SIZES, GAUGES, WEIGHTS AND CAPACITIES

Capacities Indicate Cubic Feet of Air Discharged per Hour; Wind Velocity 5 Miles per Hour

Sizes, in.	8	10	12	14	16	18	20	24	30	36	48	60	72
Material, ga.	26	26	26	24	24	24	24	24	20	20	18	16	
Weights, lb.	20	35	40	70	105	155	200	230	440	525	650	1000	3000
Exhaust capacity	18000	27000	38000	53000	70000	85000	106000	145000	220000	340000	610000	950000	1500000

PENN VENTILATING COMPANY

Manufacturers of Rotary-Stationary-Power Ventilators

MAIN OFFICE AND WORKS

2810-2812 Richmond Street, PHILADELPHIA, PA.

NEW YORK SALES OFFICE: 132 Nassau Street

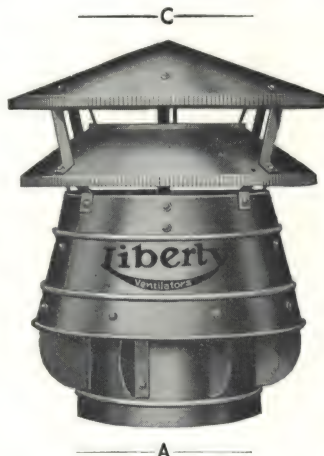
AGENTS IN ALL PRINCIPAL CITIES

LIBERTY SIPHONAGE VENTILATOR

Because of the ingenious, effective way in which it harnesses and utilizes outside air currents, the Liberty Ventilator represents the supreme achievement of modern engineering skill.

All of the air currents—upward, downward, horizontal or swirling—are brought under control and forced to perform their task of drawing heat, foul air, steam fumes, smoke or floating dust up and out of the building.

The Liberty Ventilator utilizes four principles of physical science: (1) air impingement; (2) positive and negative air action (pressure and vacuum); (3) siphonage; (4) stack action.



The following data was compiled by our Engineering Department and also under actual conditions while in competitive test.

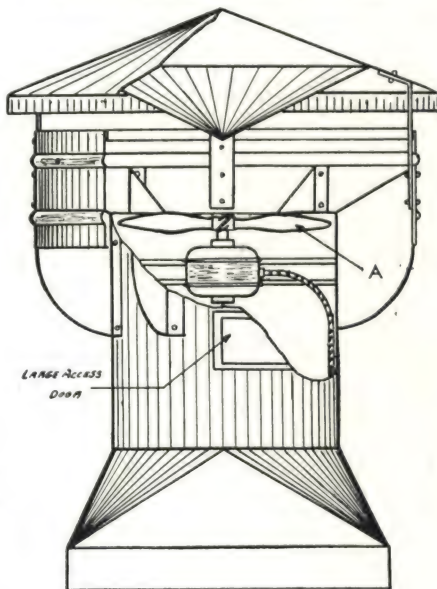
LIBERTY VENTILATOR DATA

Size, in. A	Over-all, Ht. in. B	Width, in. C	Area, sq. in.	Dis-charge cap. per min., cu. ft.	Approx. ship'g weight, lb.	Gauge of metal	Wgts. of cop-per, oz.
12	24	21	113	490	26	24	18
18	36	31½	254	1259	65	24	20
24	48	42	452	2233	125	22	20
30	60	52½	707	3485	220	20	24
36	72	63	1018	5027	395	20	24
42	84	73½	1385	6841	460	20	24
48	96	84	1810	8896	600	20	32
54	108	94½	2290	11306	850	20	32
60	120	105	2827	13958	900	18-20	32

Liberty Ventilator Capacities—These figures are based on the following conditions: Wind velocity—10 miles per hour; difference in temperature of indoor and outdoor air—20° F.; height of ventilators above intake—30 ft.

PENN POWER VENTILATOR

The power unit was developed by Penn Ventilating Engineers to meet adverse conditions in the ventilating field, where a fan motor is essential as an auxiliary. When dust, fumes, heat, smoke, etc., must be exhausted periodically, or when resistance to flow (static pressure) is encountered, we recommend the Penn Power Ventilator. When the motor is not in operation this unit is so constructed to give the same exhaust capacity as the Liberty Siphonage Ventilator.

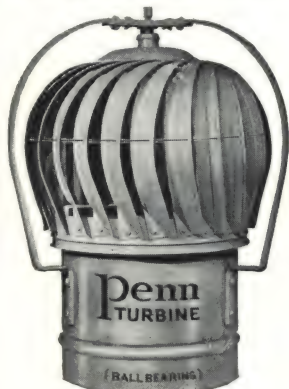


CAPACITIES PENN POWER VENTILATORS

Size of Ventilator Duct, in.	Number of blades	Exhaust cubic feet per minute free air	Motor hp.	Fanspeed, r.p.m.
10	4	700	1/50	1750
12	4	1,200	1/20	1750
12	4	980	1/30	1140
16	4	3,100	¾	1750
16	4	2,000	1/10	1140
18	4	3,600	1/6	1750
18	4	3,000	1/10	1150
18	4	2,700	1/10	860
24	4	5,700	¾	1750
24	4	4,750	¾	1150
24	4	4,300	¾	860
30	4	7,000	¾	1750
30	4	5,300	¾	1150
30	4	4,400	1/6	860
36	2	14,000	1	1750
36	4	17,000	1½	1750
36	2	10,000	¾	1150
36	4	11,500	¾	1150
36	2	6,700	¾	860
36	4	7,500	¾	860

MULTI-BLADE PRESSURE UNITS

Size, in.	Number of blades	C.f.m. free air	Static Pressure			Hp.	R.p.m.
			1/8 in.	1/4 in.	3/8 in.		
12	Multi	1600	1250	.....	.....	1/20	1150
16	Multi	2450	1950	1625	.....	¾	1150
18	Multi	3250	2600	2000	1350	¾	1150
24	Multi	4800	4000	3200	2400	¾	850
30	Multi	7500	6350	5200	4000	¾	690



Penn Turbine Ventilator

A silent rotating ventilator—used effectively for exhausting foul air, smoke and gases. This ventilator rotates at a high speed with the slightest breeze. An ideal ventilator for all types of buildings.

Pul-Air Ventilator

The Pul-Air Ventilator has been designed to give the utmost efficiency and it successfully meets in every particular the demand for a highly efficient weatherproof ventilator at a moderate price.



Catalogue

Our new edition of the Ventilator Data Book will be of vital interest to the architects and engineers and can be had upon request.

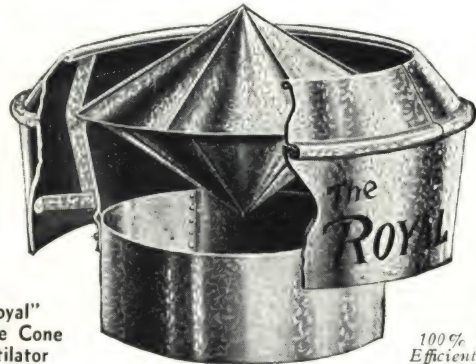
ROYAL VENTILATOR COMPANY

412 Locust Street, PHILADELPHIA, PA.

Products

Manufacturers of "ROYAL" Double Cone Ventilators, Glass Top Ventilators, Rectangular and Square Ventilators with Fire Retarding Dampers, Insect and Bird Proof Ventilators, The "ROYAL" Fan Electric Ventilator, made of Galvanized Steel, Armco Iron, Copper, etc.

The ROYAL
TRADE-MARK
(Reg. U. S. Pat. Off.)



"Royal" Double Cone Ventilator

100% Efficient

"Royal" Double Cone Ventilator

The "Royal" is so designed that full advantage is taken of the wind to produce additional draft. Complete renewal of air is accomplished under the most difficult and unusual conditions by installing "Royal" Double Cone Ventilators. The many unique and original principles embodied in the design of the "Royal" make it 100% effective and insure positive ventilation under any weather condition. Tapered frustums deflect the outer air over and under the edges of the frustums resulting in a powerful suction in the tube; this means maximum exhausting capacity. Foul gases, etc., will readily pass out even when no wind is blowing. The inverted or bottom cone of the "Royal" avoids the creation of eddies, the outgoing air having a free outlet unimpeded by excess friction. The upward moving foul air, etc., strikes the inverted cone and is drawn directly upward and outward.

The "Royal" is not affected by down-drafts.

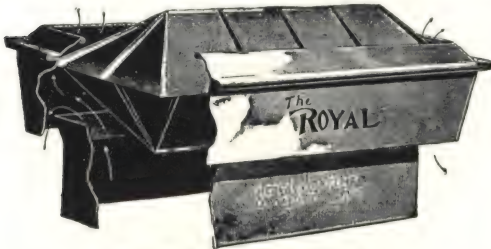
Construction—Superior and exclusive construction features include lapped seams, giving three thicknesses of metal at joints, usually the weakest point. Wired edges and galvanized malleable iron or copper stays so arranged that they cannot interfere with the passage of air currents. The double cone has standing seams and gives two thicknesses of metal instead of one.

Adapted for foundries, powerhouses, factories, as well as schools and other buildings.

Made in standard sizes 2 to 96 in.

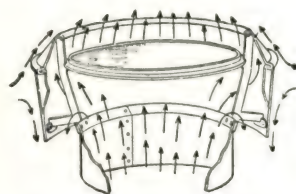
Specification

"Furnish and erect Royal Double Cone [Glass Top] Ventilators, manufactured by ROYAL VENTILATOR COMPANY, Philadelphia, Pa."



"Royal" Rectangular Ventilator

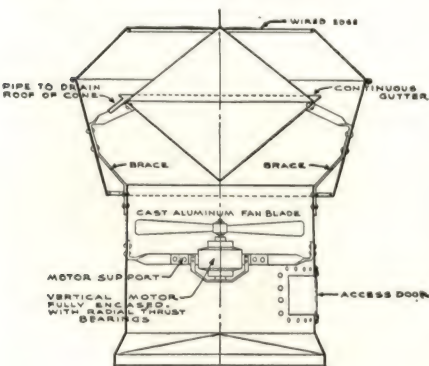
Designed to meet conditions where the maximum amount of ventilation is required at all times. Made in any desired size, with or without dampers, glass or metal top. Also made square



"Royal" Glass Top Ventilator
Contains a greater glass area, reflects more light, gives more ventilation. Can be fitted with damper that will not shut off light

Cone Damper "Royal"

Used where low base is required. Lower cone is detached, slides on rod closing ventilator when lowered. Can be fitted with fusible link. Unobstructed air passage when damper is open



"ROYAL" FAN VENTILATOR

The Royal Fan Ventilator is designed for buildings requiring immediate exhaust of hot air, fumes, smoke, steam, etc.

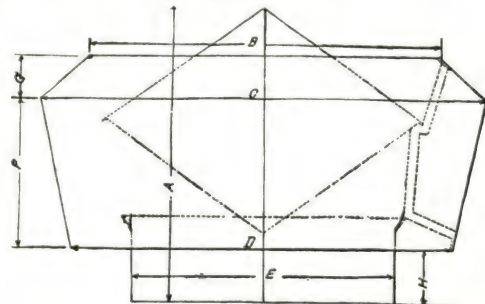
The head with Inverted Cone is similar in design to the Royal Double Cone Ventilator except that depth of cone has been increased and lower cone extended beyond upper cone. Friction is eliminated, a direct outward passage of air is assured: Upper and lower frustums have been extended to prevent outside air from entering ventilator, make same storm proof and increase capacity when motor is shut down.

Motors can be furnished for any combination of current specifications. Send for descriptive folder giving complete information

"ROYAL" DOUBLE CONE VENTILATOR DATA

Size, in.	Cu. ft. exhaust per min., wind 5 miles per hour		Dimensions, in.			Area, sq. in.	Gage of iron	Weight of copper oz.
	Temp. dif. in bldg. and outside		A	C	E			
	0°	20°						
10	141	186	12	16	10	78	24	16
12	159	317	13	19	12	113	24	16
16	388	512	17	26	16	201	24	16
18	490	832	18	29	18	255	24	16
20	606	911	21	31	20	314	24	16
22	709	1059	24	34	22	380	24	18
24	874	1373	24	39	24	453	22	18
26	1005	1631	24	42	26	527	22	18
28	1186	2080	26	45	28	615	20	18
30	1364	2390	26	45	30	707	20	18
32	1551	2700	25	47	32	804	20	18
34	1765	2987	28	50	34	908	20	18
36	1961	3361	28	56	36	1017	20	18
40	2424	4124	34	61	40	1257	18	18
42	2673	4680	32	68	42	1386	18	18
44	3124	5310	35	70	44	1620	18	18
48	3489	5987	39	75	48	1809	18	20
54	5414	8304	42	84	54	2390	18	20
60	6665	9721	47	94	60	2807	18	24
66	7851	13346	52	103	66	3504	18	24
72	10682	16910	50	108	72	4071	18	24

Bases made to fit any type or pitch of roof.



Sectional Drawing "Royal" Double Cone Ventilator
Send for catalogue and detail card

DATA ROYAL FAN VENTILATORS

Stack Size	Motor hp.	Fan speed r.p.m.	Capacity, fan and vent c.f.m.		Blade size	No. of blades
			Free air	1/4" S.P.		
12"	1/50	1650	819	.....	9"	4
	1/30	1650	1259	.....	12"	2
16"	1/30	1150	1618	.....	14"	2
	1/20	1750	2308	1762	14"	2
18"	1/10	1150	2340	.....	16"	2
	1/10	1150	2490	1932	16"	4
	1/10	1750	3090	2632	16"	2
20"	1/10	1150	3486	1911	18"	2
	1/8	1750	3976	3211	18"	2
	1/8	1150	4374	.....	24"	2
24"	1/8	1150	5654	4473	24"	4
	1/8	1750	5924	5373	24"	2
	1/10	860	3474	.....	24"	2
30"	1/8	1750	6414	5990	24"	2
	1/8	1750	8214	6964	27"	2
	1/8	1150	6024	.....	27"	2
36"	1/8	1150	9361	7961	32"	2
	1/8	1750	12011	.....	32"	2
	1/8	850	7421	.....	32"	2
42"	1	1750	16773	16273	36"	2
	1/8	850	10423	.....	36"	2
48"	1/2	860	19789	.....	48"	2
	1	1150	25329	23489	48"	2

H. H. ROBERTSON COMPANY

Robertson World-Wide Building System

PITTSBURGH, PA.

FACTORIES: AMBRIDGE, PA.; SARNIA, ONT., CANADA; ELLESMERE PORT, CHESHIRE, ENG.

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PITTSBURGH, PA., H. H. Robertson Company, 2000 Grant Bldg.
PORTLAND, ORE., Mercer Steel Company, 838 N. W. 13th Ave.
RICHMOND, VA., R. M. Nolting, 210 Builders Exchange
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TULSA, OKLA., Murray R. Womble, 525 National Bank of Tulsa Bldg.

For England: H. H. ROBERTSON COMPANY, MERSEY IRON WORKS, Ellesmere Port, Cheshire

FOR CANADA: H. H. ROBERTSON COMPANY, LTD.

TORONTO (MAIN OFFICE), 611 Metropolitan Bldg.

MONTREAL OFFICE, 524 Confederation Bldg.

Products

ROBERTSON NATURAL DRAFT VENTILATORS; ROBERTSON RECTANGULAR VENTILATORS, ROBERTSON STREAMLINED VENTILATORS, ROBERTSON MONITOR VENTILATORS (auxiliary fan equipment available); ROBERTSON VENTILATOR BASES; HOODS and DUCTS; LOUVRES.

For Robertson Protected Metal (RPM), Protected Metal V-Beam Sheets, Floor Wiring System, Sky-



lights and Robertson Cellular Steel, see File Index.

Patents

Robertson Ventilators are protected by United States Patent No. 1,589,581, June 22, 1926; Canadian Patent No. 244,617; other patents allowed and pending; also protected by patents in other countries.

ROBERTSON ROOF VENTILATORS

The Robertson Ventilator

Robertson Ventilator is a stationary type, of great capacity. Its height makes it possible to have free area outlets almost three and one-quarter times the stack area. This permits unobstructed passage of air. The ventilator is enclosed in a suction band which increases the area, displaces more air and causes a great vacuum action from passing winds. Because of the area of the free air outlets and the suction band action, it is usually possible to obtain ample ventilation with a smaller number of Robertson Ventilators than with other types with a more standard rate of discharge. *This fact should be borne in mind when figuring costs on Robertson Ventilation installations.*

Importance of Ordering by Exhaust Capacities—Ventilators are sold by sizes expressed in inches. These sizes refer to width of stack opening and not to over-all width of ventilator. However, over-all width has a direct bearing on exhaust capacities because it affects air displacement. Two ventilators of the same rated size may be greatly different in actual size. The safe way to order ventilators is by exhaust capacities.

Capacities of Robertson Ventilators (in actual field service) have been determined under 2250 sets of conditions. *These figures are published in a data book which will be sent on request.* Capacities of various sizes under one set of conditions are given at right.

Construction Details—Robertson Ventilators are made of Robertson Protected Metal (RPM) galvanized steel, copper, aluminum or any other suitable material. RPM is used in severely corrosive conditions. The parts are joined into a strong, rigid unit with system of bracings with

bolts and lock washers. The ventilator withstands wind pressures equal to dead load of 30 lbs. per sq. ft.

Explosion Cap—For grain elevators and factories where dust explosions may occur, Robertson Ventilators may be equipped with explosion caps. They are hinged on both sides and open in the middle to make the full area of stack available. They withstand suction of 75 m.p.h. wind velocity without opening, but will open with explosion pressure inside of 4 lbs. per sq. ft.

TYPICAL ROBERTSON VENTILATOR CAPACITIES

Wind velocity: 8 m.p.h. Difference in temperature inside and outside: 20° F. Height of ventilators above air intakes: 50 ft.

Size, in.	Discharge cap., per min., cu. ft.*	Size, in.	Discharge cap., per min., cu. ft.*	Size, in.	Discharge cap., per min., cu. ft.*	Size, in.	Discharge cap., per min., cu. ft.*
12	462	20	1499	42	5658	66	13872
14	665	24	1848	48	7398	72	16646
16	898	30	2882	54	9341	84	22472
18	1041	36	4160	60	11560	96	29358

*These figures represent actual measured exhaust capacities and not so-called "rated capacities."

DIMENSIONS, GAUGES AND WEIGHTS OF ROBERTSON VENTILATORS

Letters here refer to accompanying diagram

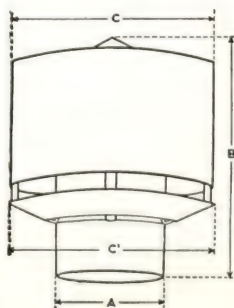


Fig. 2

Letters on diagram refer to accompanying table

Dimensions, in.				Gauge* galv. and RPM		App. net wt., lbs.		App. shpg. wt., lbs.	
A	B	C	C1	Galv.	RPM	Galv.	RPM	Galv.	RPM
12	22 3/4	22 3/4	24	24	24	31	46	64	81
14	27 1/8	26 1/2	28	24	40	59	77	99	99
16	29 3/4	30 1/2	32	24	48	70	96	125	125
18	32 1/2	34	36	24	57	87	138	172	172
20	38 1/2	37 1/2	40	24	71	103	166	209	209
24	45	45 1/2	48	22-24	110	160	299	357	357
30	55 1/2	57	60	20-22	191	247	443	529	529
36	67 1/4	67 1/2	72	20-22	275	358	545	647	647
**42	74 1/4	79 1/2	84	18-20	528	584	786	933	933
**48	89 1/2	91	96	18-20	635	782	1026	1219	1219
**54	101 1/2	102	108	18-20	796	969	1219	1465	1465
**60	108 1/2	113	120	18-20	1127	1395	1697	2052	2052
**66	126 1/2	125	132	18-20	1360	1645	2182	2589	2589
**72	129	136	144	18-20	1680	1995	2476	2932	2932
**84	149 1/2	158 1/2	168	16-20	2314	2805	3146	3784	3784
96	185 1/4	181 1/2	192	16-20	3890	4426	4568	5426	5426

*Where two gauges are shown, heavier gauge is for stack only.

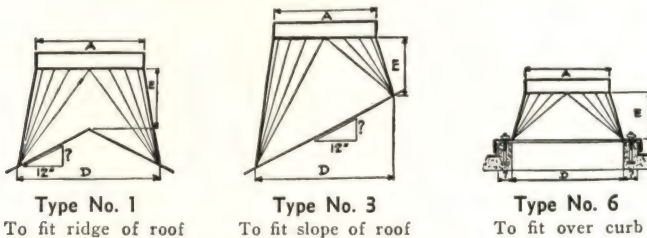
**Indicates that ventilator is shipped partially knocked down.



Fig. 1. Robertson Ventilator

ROBERTSON VENTILATOR BASES

Can be furnished for any kind of roof. The types diagrammed below are commonly used. Round to square bases are strongest and are shipped unless otherwise ordered.



Types 1 and 3 fit roofs of any slope. In ordering specify roof slope, type of base and kind of roof deck.

Type 6 fits concrete or wood curbs. Specify opening size and curb thickness.

DIMENSIONS, GAUGES AND WEIGHTS OF VENTILATOR BASES

Dimensions, in. Letters refer to diagrams			Gauges, RPM and galv.	App. net wt., lb.		App. shpg. wt., lb.	
Size A	Size D	Size E		Galv.	RPM	Galv.	RPM
12	16x 16	10	22	12	16	56	64
14	18x 18	10	22	18	23	63	73
16	21x 21	10	22	25	30	66	77
18	24x 24	10	22	35	40	79	90
20	28x 28	10	22	45	55	98	111
24	32x 32	10	22	55	75	106	120
30	38x 38	12	20	75	100	143	162
36	45x 45	14	20	110	140	173	200
*42	52x 52	**14	18	140	180	273	299
*48	60x 60	**15	18	190	230	432	495
*54	68x 68	**16	18	240	300	542	618
*60	78x 78	**20	18	300	380	539	627
*66	87x 87	**22	18	360	480	638	740
*72	96x 96	**24	18	460	580	841	968
*84	110x110	**26	16	660	770	1090	1221
*90	118x118	**28	16	785	920	1329	1485
*96	126x126	**30	16	935	1085	1514	1689

*Ventilator base in two pieces. **Dimension E for Type No. 6 bases, 42 in. and larger, is one-half of Dimension A.

ROBERTSON RECTANGULAR VENTILATORS

Robertson Ventilators are offered in rectangular shapes for buildings where straight lines are desirable to harmonize with the architectural lines, and in buildings where large ventilating openings are required for rapid removal of fumes and heat.

The rectangular ventilator provides a continuous ventilating opening throughout its entire length.

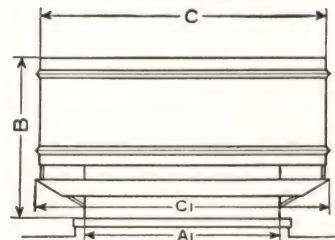


Fig. 3

Letters on diagram refer to accompanying table

It can be made in any desirable length.

It has all the advantages of the round ventilators.

Auxiliary power attachments (as described under Robertson Fan Ventilators) can also be installed in the rectangular ventilator.

If such an installation is desired, write H. H. ROBERTSON COMPANY for recommendations.

DIMENSIONS, WEIGHTS, CAPACITIES OF ROBERTSON RECTANGULAR VENTILATORS

Dimensions, in. Letters refer to diagrams				Gauge, galv. and RPM	App. net wt., lb.		App. shpg. wt., lb.		Size of Robertson round ventilator with same exhaust cap., in.
Size A1	B	C	C1		Galv.	RPM	Galv.	RPM	
8x 16	15 $\frac{1}{16}$	22 $\frac{3}{4}$	24	24	33	45	86	99	12
10x 20	20	29 $\frac{1}{4}$	30	24	52	73	118	138	16
12x 24	23 $\frac{1}{4}$	34 $\frac{3}{8}$	36	24	109	138	195	224	18
18x 36	34 $\frac{1}{2}$	51 $\frac{1}{8}$	54	24	186	244	352	410	24
24x 48	46	68 $\frac{3}{8}$	72	24	399	508	672	781	36
30x 60*	63 $\frac{1}{16}$	86 $\frac{3}{4}$	90	24	555	708	1034	1186	42
36x 72*	74 $\frac{1}{4}$	104	108	24	646	853	1165	1372	54
42x 84*	80 $\frac{1}{2}$	121 $\frac{3}{8}$	126	22	838	1104	1558	1830	66
48x 96*	91 $\frac{1}{16}$	138 $\frac{3}{4}$	144	22	992	1347	1885	2235	72
54x108*	98 $\frac{1}{8}$	156	162	22	1380	1807	2291	2720	84
60x120*	119 $\frac{1}{8}$	173 $\frac{1}{2}$	180	22	1626	2150	2666	3190	90
66x132*	121 $\frac{1}{16}$	190 $\frac{3}{4}$	198	22	2412	2948	3515	4045	96

*Shipped partially knocked down.

ROBERTSON FAN VENTILATORS

The standard Robertson Ventilator has long been known as one of the most efficient gravity-type ventilators on the market. To obtain greater flexibility for this ventilator under unfavorable atmospheric conditions and more positive ventilation at certain periods, an auxiliary power attachment may be incorporated in it. This combination is the Robertson Fan Ventilator.

Because of the scientific design of the free area outlets in the standard Robertson Ventilator, the auxiliary power attachment is able to set a new maximum for the number of cubic feet of air moved per minute per horsepower.

The power attachment is made in a separate unit and can be attached to any Robertson Ventilator, including those now installed. It can also be installed in the Robertson Rectangular Ventilator.

Motor Inside or Outside—For ordinary conditions, motor and fan are installed in the stack, as in Fig. 4. For severely corrosive conditions, the motor is installed on top of the ventilator cap as in Fig. 5. Automatic control, providing cut-in and cut-out of motor, furnished at extra charge. Explosion-proof type motors and variable speed motors can be furnished at an extra cost.

Damper Controls—Flat, butterfly or louver dampers can be furnished in the ventilator stack. Damper control is either (a) *hand control*, by a simple chain or gear-operated shaft connected to rack and pinion and operated by hand wheel; or (b) *electric control*, by push button or thermostat.

Low Static Pressure—Static pressure loss due to velocity in Robertson Ventilators does not exceed $\frac{1}{8}$ in. w.g. at a velocity of 1850 l.f.m. with air temperature 70° F. and barometric pressure 29.92 in. of mercury (sea level).

Lubricating Devices—Lubrication of motor and fan bearings by hand, from a convenient point near the floor of the building, for a single unit; or a centralized lubricating system for a series of units, can be furnished at an extra cost.

TYPICAL CAPACITIES OF ROBERTSON FAN VENTILATORS

For complete tables write for *Robertson Ventilation Data Book*.
Wind velocity: 6 m.p.h. Difference in temperature inside and outside: 30° F. Stack action: 50 ft.

Vent diam., in.	Fan diam., in.	Number of fan blades	Motor h.p. consumed	Total exhaust of fan and vent., cfm.	Shipping weight of fan, lb. (Fan, motor, mounting and collar)
12	8	4	1/20	640	80
14	10	4	1/40	875	95
16	12	4	1/40	1195	112
18	14	4	1/30	1650	140
20	16	4	1/20	2140	155
24	18	4	1/12	2880	175
30	24	4	1/10	4675	228
36	30	4	1/4	8040	270
42	30	4	1/4	9190	365
48	36	4	3/4	13880	415
54	42	6	1	18265	545
60	48	6	2	26175	795
66	54	6	2	29900	945
72	54	6	2	31550	1105
84	60	6	3	43535	1327

Table is for fans in ventilators where there is no duct in connection with installation. For static pressure data, write for *Robertson Ventilator Data Book*.



Fig. 4. Robertson Ventilator with Fan in Stack

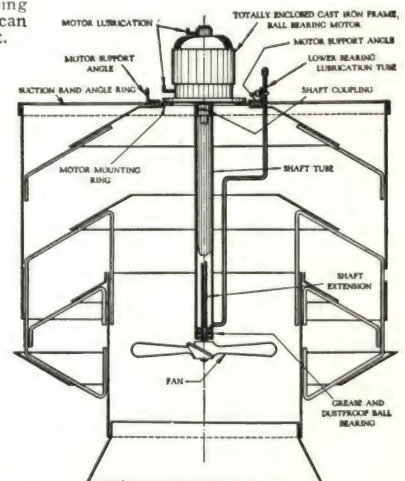


Fig. 5. Robertson Ventilator with Motor on Top of Cap

THE SWARTWOUT COMPANY

Member Roof Ventilator Institute

Ventilation—Industrial and Commercial
18515 Euclid Avenue, CLEVELAND, OHIO

DISTRICT OFFICES

ATLANTA, GA., 806 Norris Bldg.
BOSTON, MASS., 143 Broadway, Cambridge,
Mass.
CHICAGO, ILL., 549 W. Randolph St.
DETROIT, MICH., 1441 Times Square

HOUSTON, TEX., H. T. Rieley, Lamar Annex
Hotel
KANSAS CITY, MO., 106 Carmen's Bldg.
NEW YORK, N. Y., 103 Park Ave.
PHILADELPHIA, PA., 600 So. Delaware Ave.

PITTSBURGH, PA., 1214 Chamber of Com-
merce Bldg.
ST. LOUIS, MO., 1520 Market St.
COLUMBUS, OHIO, 1085 E. 17th Ave.
DAVENPORT, IOWA, 2108 Grand Ave.

AGENTS IN OTHER PRINCIPAL CITIES

Gravity Ventilation Efficiency with Economy

To secure efficient and satisfactory ventilation with the greatest economy the Swartwout "Natural" Method should be used. It lets nature do the work, utilizing nature's basic laws to the fullest extent in heat removal, fresh air provision, smoke, fume and vitiated air removal, and general ventilation. Nature's basic principles cannot be improved upon. But they can be assisted and accelerated, which is what the Swartwout method does in building ventilation.

The Swartwout "Natural" Method is economical to install—it eliminates power cost—and requires no maintenance. First cost is last cost, and satisfaction guaranteed.

Choosing a Ventilator

You specify and buy ventilators to secure ventilation. "Ventilation" therefore is what you actually specify and buy. You should accordingly choose the ventilator that assures air movement in the right proportion and in the right place to fulfill the specific needs.

Swartwout Ventilation Engineers are at your service to study your particular conditions and problems and give the benefit of their long experience and technical training whenever you have a ventilation problem—Swartwout knows the answers. Their reliable and conservative recommendations obligate you in no way.

Swartwout-DEXTER HEAT VALVE

THE SWARTWOUT COMPANY.....EXCLUSIVE LICENSEE
UNDER PATENT Nos. 1611005, 1917216 AND OTHERS PENDING

The Original (Patented) Heat Valve

There is only one "Heat Valve." It is the original "Swartwout-Dexter Ridge Ventilator." None others can be rated as such—and none others duplicate it in performance. Its efficiency is in its design—assuring *complete and continuous* satisfaction—accept no substitute.

How It Operates

By placing the "Heat Valve" along the entire length of the roof (usually on the ridge) "spot" ventilation is avoided. It utilizes nature's basic principle of stack effect (flow of the heat upward) and makes, figuratively speaking, a stack of the building on which it is installed. Heat, vitiated air, fumes, and similar undesirable conditions are alleviated through flow of the interior air upward and escape through the Heat Valve—being replaced by fresh cool air from inlets (windows, doors, or others as provided) near the ground level.

This is illustrated in Fig. 1 which also shows how the outside air currents are utilized to accelerate the air movement through the Heat Valve. It is provided with a damper which may be opened and closed at will thus providing the exact degree of ventilation required.

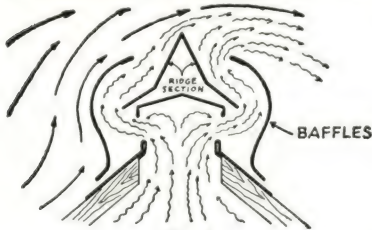


Fig. 1



Fig. 2

Features

(1) Made of heavy gauge galvanized iron (special material if required). (2) Rust-proof finish throughout. (3) Cross currents of air have no retarding effect on discharge from Dexter Heat Valve (Fig. 1). (4) It is stormproof (Fig. 3). (5) Bird and insect screen furnished when desired. (6) An effective damper is provided for opening and closing the Heat Valve at will. (7) Damper may be fitted with felt strips to deaden noise of damper striking roof opening when closing, and prevent heat loss in winter. (8) No maintenance expense—consumes no power, and there are no parts that will wear out or get out of order. (9) The pleasing lines of the Dexter Heat Valve blend with almost every style of architecture.



The Swartwout Company Is the Exclusive Licensee

Under the Dexter Patents

No other company is authorized to make the Heat Valve.

Its patented design is scientifically correct—with parts properly proportioned and assembled in relation to each other to secure greatest possible capacity from stack effect and outside air conditions.

Why You Should Specify Only a Genuine Heat Valve

(1) To assure that you will receive the complete and continuous satisfaction you have a right to expect.

(2) It is nationally known and is backed by the manufacturer's guarantee.

(3) It is not an experiment. A large number of eminently satisfactory installations in different industries and on different types of buildings testify to its high efficiency and reliability under all conditions.

(4) It has high rated capacity which is augmented by increased discharge induced by outside wind currents.

(5) It is easily and quickly installed.

(6) It provides greatest square foot area of opening per dollar invested—hence is extremely economical.

(7) It can be used on almost every type of building—and is especially adaptable where high temperatures must be eliminated.

(8) It is architecturally attractive—blending in with architectural lines and eliminating unsightliness of individual ventilators on buildings where "appearance" is a factor to be considered.

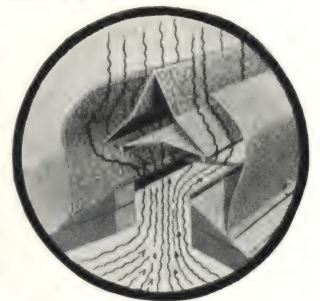


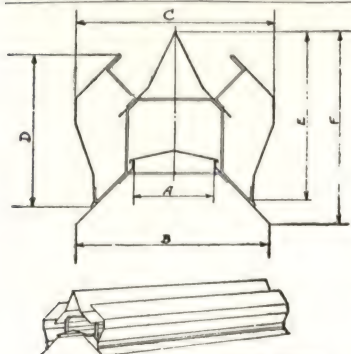
Fig. 3

Sizes and Weights

The size of the Heat Valve is the throat dimension, indicated as "A" on drawing below.

GALVANIZED IRON

Throat size	Net wt. per ft.	Shipping wt. per ft.	Throat size	Net wt. per ft.	Shipping wt. per ft.
3 in.	5½ lbs.	9 lbs.	12 in.	23 lbs.	32 lbs.
4 in.	6 lbs.	10 lbs.	18 in.	38 lbs.	50 lbs.
6 in.	8 lbs.	14 lbs.	24 in.	68 lbs.	92 lbs.
9 in.	13 lbs.	20 lbs.	36 in.	122 lbs.	150 lbs.



The Heat Valve is also made in various other materials, such as copper, aluminum, lead-clad steel, and special metals. Weights of various sizes in the special metals will be furnished on request, also the dimensions of the 36-in. heat valve. For unusually high temperatures and special capacity a 48-in. heat valve is made, the details of which will be furnished on request. Write for literature.

DIMENSIONS OF DEXTER HEAT VALVES (INCHES)

Size	Gauge	A	B	C	D	E	F
3	24	3	8 1/8	9 1/4	6 1/4	7 3/4	9 1/8
4	24	4	9 3/4	9 1/2	7 1/4	8 1/2	11 1/2
6	24	6	14 5/8	14 1/2	10 7/8	12 7/8	14 1/2
9	24	9	21 7/8	22 3/4	15 1/2	18 3/4	24
12	22	12	29 1/8	29	21 1/2	24 3/4	27 1/4
18	20	18	43 5/8	43 7/8	31	36 1/2	41 1/2
24	18	24	58	58	39 1/2	45 1/2	54

**Specifications of the Swartwout-Dexter Heat Valve**

Ventilators shall be of the continuous Ridge Type, commercially known as "Heat Valves," and shall conform in detail to the design as shown on drawings. Sizes and dimensions shown on detailed drawings shall be strictly adhered to. They shall be constructed of galvanized iron, made by nationally known manufacturers, of the standard gauge used for the size by the ventilator manufacturer, or of such other metals as indicated on the drawings.

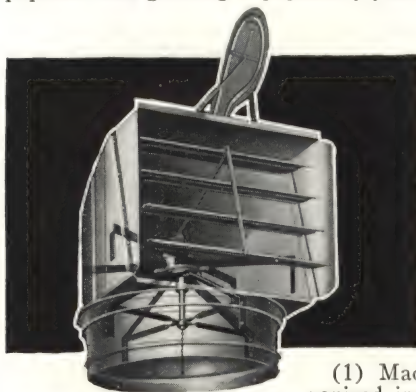
The design shall be such as to make the ventilator watertight and weathertight under all conditions. The outside baffles shall extend from the plane of the roof to top of ventilator overlapping ridge cap to insure watertightness. A ridge cap of the design shown on drawings shall cover roof opening with its peak extending to a point between and above side baffles to insure positive induction movement. Suitable openings shall be provided at base of baffles for water drainage. A manually operated damper of the design indicated shall be part of the ventilator to permit tight closing or full opening at will. Adequate interior bracing shall insure rigid construction and the ventilator shall be furnished in standard 10-ft. lengths with splice joints for continuous erection.

Ventilators shall be of standard commercial type, nationally known and recognized as such. They shall be Swartwout-Dexter make or approved equal.

Swartwout

ROTARY BRONZE BALL BEARING VENTILATOR

The Swartwout Rotary Bronze Ball Bearing Ventilator has been the standard of its type for twenty-five years. Always popular—and growing in popularity year after year as thousands of installations on all types of buildings testify. It is used for removal of heat, smoke, fumes, moisture, stale air and for general ventilation. Our engineers will gladly assist in determining proper size and quantity to specify.

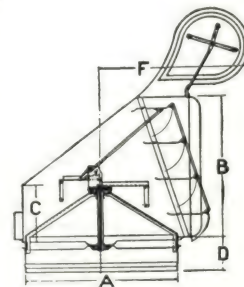
**Features of Construction**

(1) Made of heavy gauge galvanized iron (special materials if required). (2) Rustproof finish throughout. (3) All joints double-seamed—no bolts used. (4) Multiple bronze ball bearings never need oiling—will not rust, corrode or stick. (5) Oversized outlet opening with flared edges gives this ventilator extra large capacity with small compact construction. (6) Air handling ability constant under all conditions. (7) No obstructions or sharp turns to retard the free continuous flow of air. (8) Its sloping back sheds snow, rain and sleet instantly. (9) No "outside air" passes through ventilator, to displace and retard free emission of "inside air." (10) No maintenance expense—consumes no power and wear is negligible. (11) Efficient adjustable louver dampers and standard equipment. (12) Shipped completely assembled. Easily handled—quickly and economically installed. Write for complete information.

Specifications

All ventilators to be of Rotary Ball Bearing type, made of rust-resisting galvanized sheets or special metal, all interior members of angle-iron, hot-galvanized after forming and punching, or stamped from galvanized metal.

Ventilators to turn sensitively on accurately machined special hard bronze bearings, employing bronze balls, and counter-weighted on outside. Ventilators to be equipped with outside louver dampers to throw accumulated dirt outside of building when closed, louvers to be operated from within by chains over brass pulleys. Gauge of metal to be THE SWARTWOUT COMPANY, Cleveland, Ohio, Standard, as furnished in Swartwout Rotary Ball Bearing Ventilators.

**DIMENSIONS OF SWARTWOUT ROTARY BALL BEARING VENTILATORS**
Dimensions A, B, C, D, F, in inches

A	B	C	D	F	Gauge iron	Weight copper, oz.	Net weight, lbs.	Crated weight, lbs.
10	9 1/8	4	4	11 1/2	24	18	15	20
12	11	4 3/4	4	14 1/4	24	18	20	25
14	12 7/8	5 3/4	4	15 1/2	24	18	28	30
16	14 3/4	6	5	17	24	18	35	40
18	16 1/2	6 5/8	5	19	24	18	45	55
20	18 1/2	7 1/8	5	21	24	18	50	65
24	22	9	7 1/4	24 1/2	24	20	60	80
30	27 1/2	11 5/8	7 3/4	30	22	24	120	175
36	33	13 1/2	7 3/4	34 1/2	22	24	160	240
42	38 1/2	15 3/4	9 1/2	41 1/4	20	28	225	390
48	44	18 1/8	9 3/4	46 1/2	20	28	320	465
54	49 1/2	20 1/4	13 1/2	47	20	28	485	690
60	55	21 1/2	13 1/2	61	20	28	560	750
66	60 1/2	24 3/4	13 1/2	62 1/2	20	28	650	825
72	66	27	13 1/2	67 1/2	20	28	780	950



MEMORANDA

WESTERN ROTARY VENTILATOR CO., INC.

1720 East 14th Street
LOS ANGELES, CALIF.

DISTRIBUTORS

BEAUMONT, TEXAS, J. T. Booth Co., 990 Fannin St.
DALLAS, TEXAS, J. L. O'Hearn Co., 1913 North Harwood
DENVER, COLO., W. H. Dawson Co., 850 Santa Fe Dr.
HONOLULU, T. H., The von Hamm-Young Co.
KANSAS CITY, MO., Lewis P. Heaven, 2942 Bales Ave.
NASHVILLE, TENN., E. T. Kirkpatrick Co., No. 6 Berger Bldg.

PHOENIX, ARIZ., Phoenix Roofing & Supply Co.
PORTLAND, ORE., Ray F. Becker Co., 144 Page St.
SAN ANTONIO, TEXAS, J. L. O'Hearn Co., 118 Delaware St.
SAN DIEGO, CALIF., Christensen-Campbell Co., 742 First Ave.
SAN FRANCISCO, CALIF., Cookson-Cromwell Co., 361 Brannan St.
SEATTLE, WASH., Puget Sound Sheet Metal Works

Products

WESTERN ROTARY (Turbine) Ventilators.
WESTERN FAN Ventilators.

Also Forbes Syphonair (Stationary) Ventilators and Forbes Tri-Peller Exhaust Fans.

Western Rotary Ball Bearing Ventilators

Designed primarily to give the entire construction industry a turbine ventilator that is efficient at a very low wind velocity, symmetrical in design, absolutely silent in operation, and at a very reasonable cost.

The turbine revolves around a central support-shaft upon almost frictionless bearings, floating in a bath of oil and graphite and absolutely sealed against dust, dirt, steam and smoke.

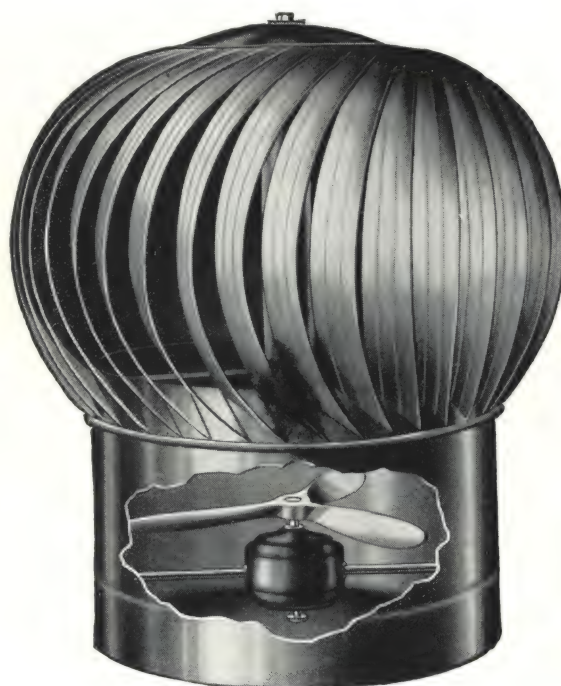
The Western Rotary is in reality an exhaust fan which derives its power from wind at even two miles an hour. This creates a centrifugal action through its turbine construction, forcing a steady circulation and aiding natural action by the mechanical lift of this revolving head. Thus a maximum degree of venting efficiency is produced.

Specify—The Western Rotary Ventilator as manufactured by the WESTERN ROTARY VENTILATOR CO., INC., of Los Angeles, Calif.

Western Fan Ventilator

In this unit *forced draft* and *gravity* ventilation is obtained in one complete machine. By this we mean a ventilating unit that will operate efficiently at no cost whatever when the outside temperature is normal. However, an exhaust fan of high efficiency is at your service for the days when the wind velocity is low and the humidity and temperature high. This fan operates from light circuit at very low power cost. Any job that can use an exhaust fan can use this unit to advantage through a saving in power cost, flexible operation and cost of installation. No penthouse is necessary with this unit. An excellent exhaust is obtained at no power cost through the turbine head. Motors are fully enclosed with thrust bearing for vertical shaft mounting. Propellers are of cast aluminum, polished and carefully balanced.

Specify—Western Fan Ventilators as manufactured by WESTERN ROTARY VENTILATOR CO., INC., of Los Angeles, Calif.



DIMENSIONS, GAUGES, WEIGHTS WESTERN ROTARY

Stock sizes, in.	Height, in.	Gauge of iron	Air displacement cu. ft. per hour 4 mi. velocity	Weights, lb.	
				Net	Crated
6	12	26	14,360	7	12
8	12	26	17,400	9	15
10	15	26	26,100	12	20
12	18	26	38,300	17	26
14	22	24	43,200	25	35
16	24	24	50,000	30	45
18	28	24	76,310	35	53
20	31	24	109,200	42	63
24	36	24	149,000	70	105
30	42	22	230,000	94	150
36	52	22	310,000	161	210
42	62	20	420,000	200	250

Note: Prices and discounts on application.

DIMENSIONS, WEIGHTS, ETC., WESTERN FAN

Sizes, in.	Displacements, 60-cycle	R.p.m., 60-cycle	Motor hp.	Weights, lb.
12	1300 C.F.M.	1725	1/20	35
14	1530 C.F.M.	1725	1/20	40
16	1710 C.F.M.	1140	1/15	55
18	2070 C.F.M.	1140	1/15	60
20	2740 C.F.M.	1140	1/8	70
24	3540 C.F.M.	1140	1/8	125
30	5000 C.F.M.	1140	1/8	175

BENJAMIN RIESNER

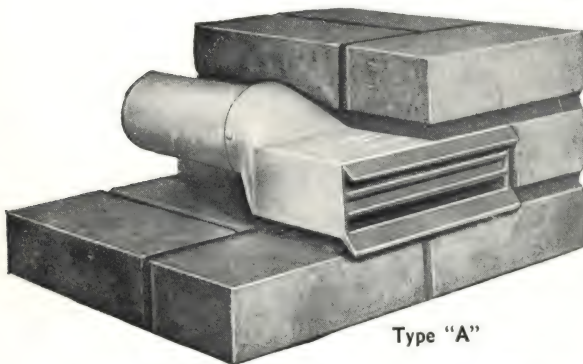
Manufacturer of the Riesner Ventilating Brick

353 East 78th Street, NEW YORK, N. Y.

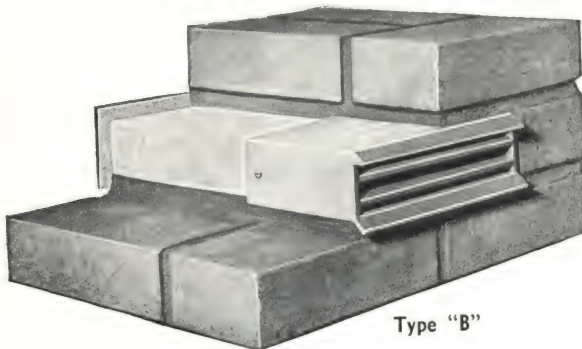
Architectural Exhibits in Principal Cities

TELEPHONE
Butterfield 8-8580

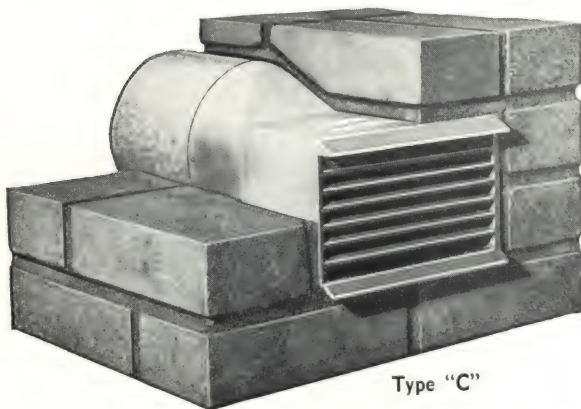
RIESNER VENTILATING BRICK—A LOUVERED WALL VENTILATOR



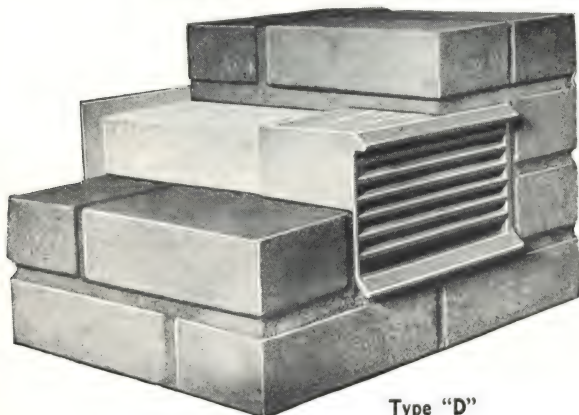
Type "A"



Type "B"



Type "C"



Type "D"

The Riesner Ventilating Brick is a hollow metal ventilating device which extends *through* the wall. It is the shape and size of one or two standard bricks and is constructed with a louvered face with waterdrip at top and bottom and an integral water stop in the casting.

Where Used

Riesner Ventilating Bricks are suitable for ventilating:

Air Spaces	Hung Ceilings	Attics
Kitchens	Transformer Rooms	Tunnels
Closets	Cellars	Mausoleums
Garbage Receivers	Cellar Rooms	Utility Rooms
Boiler Rooms	Cold Rooms	Gas Range Hoods
Vents from Oil Storage Tanks, etc.		

How Installed

The Riesner Ventilating Bricks are "bricked in" by the mason when building up the wall, at a point 6 in. below the ceiling, with the louvered face to the outer air and duct or flue in the room.

Construction, Types and Sizes

Riesner Ventilating Bricks are made of cast iron, or cast bronze, with galvanized iron or copper pipe or duct. They extend clear through the wall from the louvered face at the outside, to the brass flange or register face at the inside of the wall.

Made in four types as follows:

Type "A"—This type is the width and height of *one* standard brick ($2\frac{1}{4} \times 8$ ins.) and transforms into a 3-in. diameter pipe which finishes with a brass flange at the inside of the wall.

Type "B"—Also the width and height of one standard brick ($2\frac{1}{4} \times 8$ ins.) extends through the wall with a 2x8-in. duct and finishes with a $3 \times 8\frac{1}{4}$ in. register face at the inside of the wall.

Type "C"—The width of *one* brick and the height of *two* bricks ($4\frac{3}{4} \times 8$ ins.) and transforms into a 6-in. diameter pipe which finishes with a brass flange at inside of the wall.

Type "D"—The width of *one* brick and the height of *two* bricks ($4\frac{3}{4} \times 8$ ins.). Type "D" extends through the wall with a $4\frac{1}{2} \times 8$ -in. duct and finishes with a $5\frac{7}{8} \times 9\frac{1}{4}$ -in. register face at the inside of the wall.

Further Details—Types "B," "C" and "D" are furnished with bronze insect screen to prevent flies and insects from coming into the ventilated areas.

Ventilating bricks are carried in stock for 12-in. walls and measure 13 ins. from exterior louvered face to pipe flange or register face at inside of wall. They can, however, be made up for 8-in. walls or any other wall thickness required.

Ventilating bricks can also be made up with elbows for ducts to meet special conditions.

Color

Cast iron ventilating bricks are painted a buff color.

Advantages

Riesner Ventilating Bricks do not take up any extra space. *They are bricked into and become a part of the wall.* Ventilating bricks can be built into frame construction, brick walls and concrete forms.

They are used to ventilate air spaces under buildings and special rooms in cellars and attics and can be furnished with elbows and offsets where the area to be ventilated is below grade.

Types "A" and "C" can readily be connected to gas range hoods. Ventilating bricks are particularly useful in kitchens where there is no room for vertical vent shafts. *They constantly ventilate and remove gas fumes, steam and cooking odors from the room.*

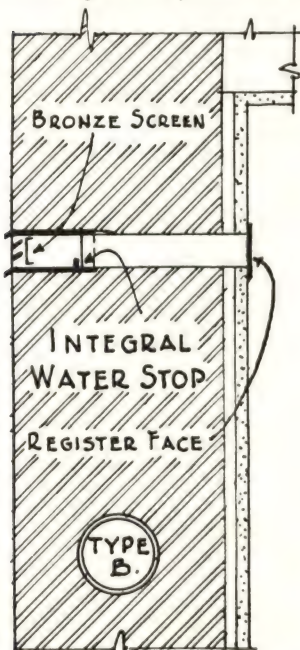
Types "B" and "D" are designed to meet general ventilating requirements for cellars, air spaces and attics, etc., to allow a circulation of air and prevent dry rot.

Ventilating bricks used in kitchens prevent discoloration of the walls and obviate the necessity of frequent repainting.

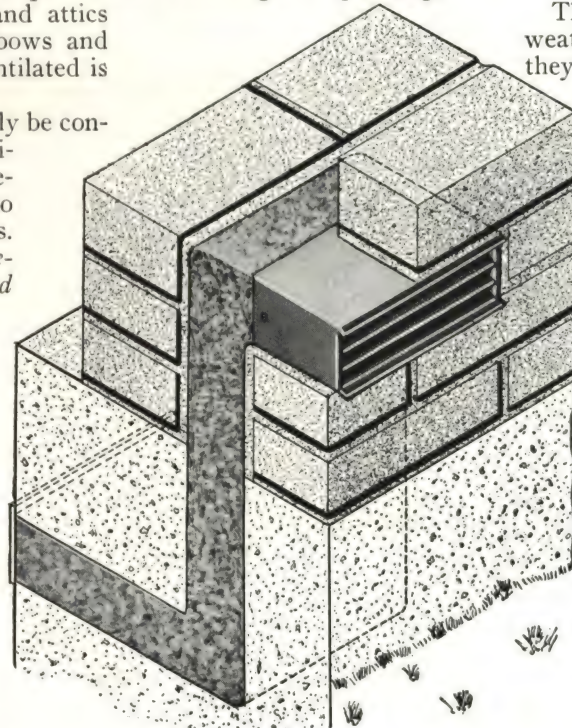
They are designed to be absolutely weatherproof, and economical because they do not deteriorate—the first cost is the only cost.

Specifications

Specify under masonry heading:
Install Ventilating Bricks as manufactured by BENJAMIN RIESNER, 353 East 78th Street, New York, N. Y., in the walls 6 ins. below finished ceiling. (Specify type, location, wall thickness and whether cast iron or bronze.)



Type "B" Showing Integral Water Stop
Also bronze screen and register face in place



Type "B" with Duct to Ventilate Under Buildings and Special Rooms in Cellars

Type "D" can also be used where more ventilation is required

Prices, Cast Iron, for 12-in. Walls

Type "A" with a brass wall flange.....	\$ 5.50 each
Type "B" with 3x8 1/4-in. register face.....	6.50 each
Type "C" with a brass wall flange.....	11.50 each
Type "D" with 5 1/8x9 1/4-in. register.....	12.50 each
Type "D" can be supplied with bronze sliding damper at \$1.50 additional.	

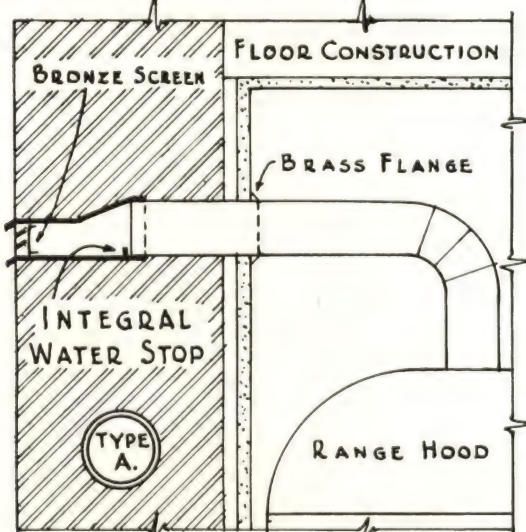
Cast bronze prices on application.

All prices net, f.o.b. New York, N. Y.

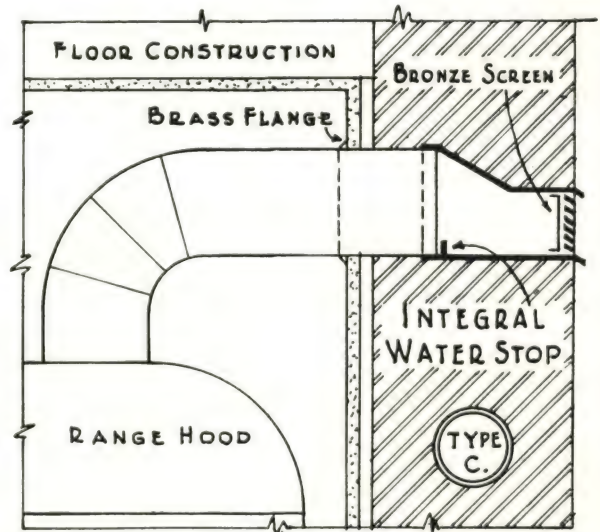
Estimates furnished promptly for special duct and elbow work.



Type "D" Showing Integral Water Stop
Also bronze screen and register face in place



Type "A" Riesner Ventilating Brick with Integral Water Stop Attached to Gas Range Hood by Means of a Flue Pipe



Type "C" Riesner Ventilating Brick with Integral Water Stop Attached to a Gas Range Hood by Means of a Flue Pipe

AMERICAN 3 WAY-LUXFER PRISM CO.

Daylight Engineers

1301-1305 South 55th Court

CICERO, ILL.

(Suburb of Chicago)

517 West 45th Street

NEW YORK, N. Y.

PRODUCTS DISTRIBUTED THROUGH ALL LEADING GLASS JOBBERS

Products

CLAD-CRETE SKYLIGHT CONSTRUCTION; ROOF LIGHTS—reinforced concrete type; ARMORED SIDEWALK LIGHTS; PRESSED TILE; SHEET PRISM; SIDEWALK DOORS; SHOWCASE DOORS; VENTILATORS; VENTILATOR SCREENS.

Also 3 Way-Luxfer Geometrical Design Transoms; Glass Dance Floors; Lithochrome Color and Hardener for concrete floors and walks; Weatherproofing Compounds.

For our pages on Sash, Metal Skylights, KuPe Stage Ventilators, Obscuring and Diffusing Glass, see File Index.

Clad-Crete Construction

A two-way reinforced concrete type of skylight construction using as a standard, $\frac{7}{8}$ to $\frac{1}{2}$ in. thick rough or ribbed wire glass units 9x9 in. Top surface of construction consists of an extruded bronze or zinc grid embedded and anchored in the concrete, forming spacers or shields for glass units, joints being sealed with special tar and sulphur compound. Entire weather surface is without exposed concrete, all borders being flashed with standard 16-oz. copper or lead coated copper as conditions require. Ideal for flat type roof light construction. Recommend building up on curbs slightly raised above roof levels proper. Can be furnished arched or sloped in either direction or practically flat. Recommend spans in the clear not exceeding 8 ft. 2 in. Weight of construction approximately 30 lbs. per sq. ft. Thickness of construction $3\frac{1}{2}$ in.

General Information—Clad-Crete can be walked upon with safety; is weatherproof; fireproof; gives maximum light transmission; can be arranged with special lenses for light diffusion; is practically burglarproof; can be easily kept clean and therefore functions 100% as a daylighting medium. It requires no protecting screens or guards. Undersurface can be decorated to suit interior conditions. Glass can be easily replaced should it become damaged for any reason. All work fully guaranteed. Special details will be submitted without obligation on receipt of request. Factory finished panels can be furnished for setting by others where areas of single panels do not exceed 25 to 30 sq. ft.

Specifications for Clad-Crete Skylights

Where shown on plans, furnish and install skylights constructed of a two-way reinforced concrete supporting grid into which are anchored spacers or shields to hold and protect the glass. The concrete shall consist of a mixture of $1\frac{1}{4}$ parts portland cement, $1\frac{1}{2}$ parts clean sharp sand, and 2 parts pea gravel

or crushed stone, $\frac{1}{4}$ -in. size. The spacers or shields shall be made of extruded bronze or zinc, at least $\frac{3}{8}$ -in. thickness, and spaced approximately $9\frac{5}{8}$ -in. centers. The spacers or shields are to be formed by continuous metallic interlocking strips with soldered joints, all extending above the top of the concrete to hold and protect the glass. Glass shall be glazed into the protecting shields with a permanently watertight tar and sulphur compound, and in such a manner that there will be no concrete surfaces exposed to the weather within the glazed area of each panel. Furthermore, all concrete margins or borders shall be flashed and made permanently watertight with lead coated copper of quality specified herein and provisions made for connecting to adjoining flashings or roofing where same occurs, so that no concrete whatsoever shall be exposed to the weathering surfaces in the entire skylight construction. The glass shall be ribbed wire glass not less than $\frac{7}{8}$ -in. thickness in its least section, and not less than 8 in. square.

Expansion joints running through the entire thickness of the construction shall be provided around each monolithic panel, caulked with refined asphaltic compound. Cuts or drawings shall be furnished in triplicate showing general type of construction, size and spacing of glass, flashing connections and arrangement and location of expansion joints. Thickness of construction shall be not less than $3\frac{3}{8}$ in. and reinforced with round deformed bars not less than $\frac{3}{8}$ -in. diameter, running in both directions. This work shall be performed by the manufacturer or his representative recognized as specializing in this class of work. Flashings or surface coverings where indicated in connection with roof lights are to be 16-oz. copper sheet, lead coated with average of 14 lbs. of lead coating to 100 sq. ft. of surface or approximately 7 lbs. to each surface. Skylights shall be equal to Clad-Crete as manufactured by AMERICAN 3 WAY-LUXFER PRISM CO.

Alternate Roof Light Construction—3 Way Daylight Roofing

Designed for setting on curbs. Heavy wire glass units sealed in cast iron galvanized shields embedded in reinforced concrete. Standard units 8 or $8\frac{1}{4}$ in. square, $\frac{7}{8}$ in. thick, spaced $9\frac{5}{8}$ -in. centers. Thickness of construction $3\frac{3}{8}$ in. Weight approximately 30 lbs. per sq. ft.

Specifications—Roof lights where shown on plans to be 3 Way Daylight Roofing Construction. Glass units to be at least 8 in. square and not less than $\frac{7}{8}$ -in. thickness. Glass sealed in cast iron hot dipped galvanized shields spaced $9\frac{5}{8}$ -in. centers, embedded in reinforced concrete. Aggregate to be in accordance with manufacturer's specifications and work to be installed complete by manufacturer. All waterproofing of areas and joints to be in accordance with manufacturer's standards. All

to be as manufactured by AMERICAN 3 WAY-LUXFER PRISM CO. or equal.

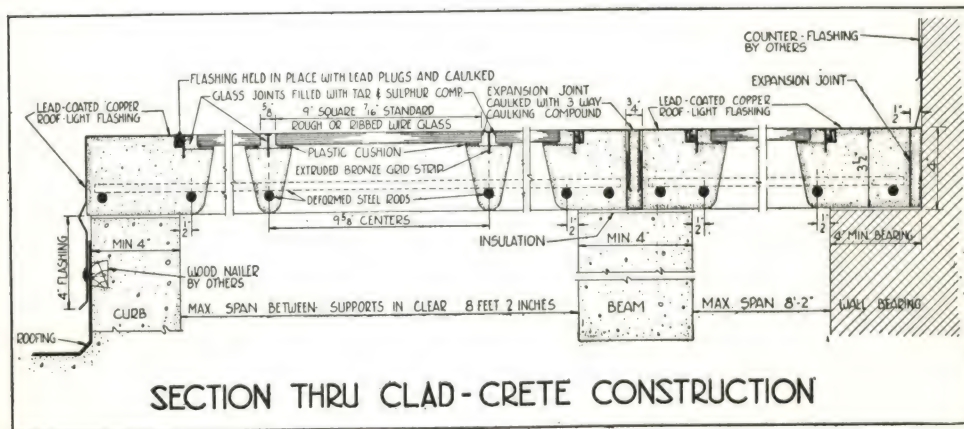
Various Types of Glass Used in Daylight Roofing—

Various type glass units 8 or $8\frac{1}{4}$ in. square by $\frac{7}{8}$ in. thick, rough rolled or ribbed.

Magnalite tile 8 in. square, $\frac{1}{2}$ in. thick for high transmission of daylight and uniform diffusion.

Lite-Way Unit No. 113-W special $6\frac{3}{8} \times 10\frac{1}{4} \times 1$ in. thick multi-prism unit designed for light diffusion and redirection of daylight into interiors.

Cylinder lens, $8\frac{3}{4}$ in. square 1 in. thick gives results in light transmission and can be arranged in design to give an artistic ornamental effect from underneath.



SECTION THRU CLAD-CRETE CONSTRUCTION

3 Way Armored Sidewalk Lights

Daylight in basements and vaults is more important today than ever. Sunlight and daylight make for health and efficient operations.

3 Way armored sidewalk lights accomplish this in more of a permanent way than any other light medium we know of.

Abundance of daylight. Lasting qualities in construction. And practically no maintenance cost.

Glass—Is armored by a heavy cast iron shield. Hot galvanized treated. Glass is sealed under special heat treatment with pure tar and sulphur compound in this shield, thus overcoming the detriments to glass from

3-WAY Daylighting Products

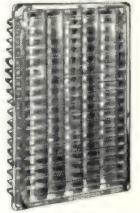
They daylight, they ventilate, they beautify, they advertise, they add distinction

3 Way Pressed Tile

3 Way Pressed tile are made special for light diffusion or redirecting light transmitted into interiors. They are designed for use in transom lights

above store fronts or for windows where interior conditions require the redirection of daylight so as to light up dark spaces back in the interior which is without window space.

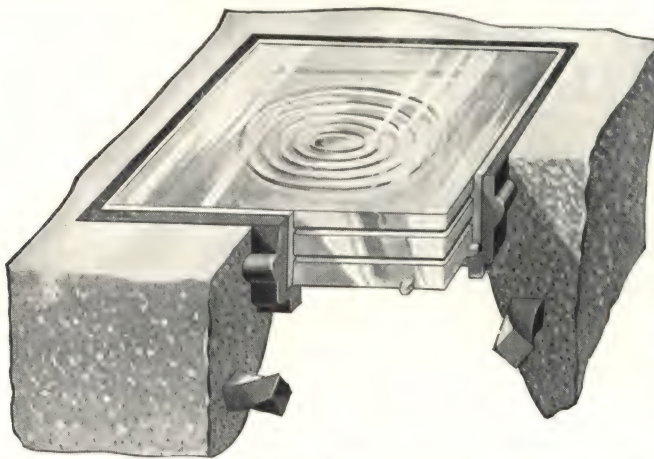
Pressed tile can be had in the following combinations, Lux Lens with Spiro border, 3 Way Lens Back tile with Dew Drop border, Luxfer Flat Back with Geometrical border.



3 Way Lens Back Tile

3 Way-Luxfer Sheet Prism

Glass cut to sizes from sheets as manufactured by Mississippi Glass Company. Ideal for industrial plants, basement windows, garages, etc. Obscure, maximum light diffusion and transmission. Furnished either plain or wired. Specify 3 Way Flat Back or Lens Back Sheet Prism.



Cut-away View of 3 Way Armored Glass, Showing Shield Embedded in Concrete

expansion pressure. Glass is Flintex-Lazalite quality free from internal stresses, each piece having passed polariscope test. Is made from special mixture for this purpose only.

Instant Replacement of Glass—Should it become necessary to replace a glass unit, replacement can be made in a moment's time by any help about the building. No special skill required. This means sidewalk lights can be kept in perpetual good condition at practically no maintenance cost.

Five-year glass guarantee.

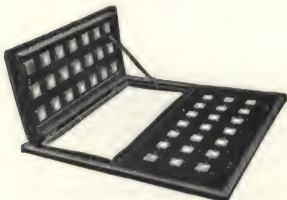
Specifications—Sidewalk Lights as shown on plans shall be of 3 Way Armored Glass Construction, Flintex-Lazalite Glass units sealed in galvanized cast iron shields, embedded in reinforced concrete construction.

Glass shall be No. 13-A ($3\frac{1}{2}$ -in. square Fresnel lens in 4-in. galvanized cast iron shields spaced 5-in. centers, or No. 12 ($2\frac{3}{4}$ in. round sunburst lens in 3-in. galvanized cast iron shields, spaced $4\frac{1}{4}$ -in. centers). Glass for replacement to be supplied free of charge, f.o.b. factory for period of five years.

(Can be furnished in factory finished slabs or installed complete by manufacturer.)

Sidewalk Doors

3 Way Type "C" watertight sidewalk door. Channel frame, tapped for drain connection, heavy bronze hinges, flush top, quality door. Hand lift or equipped for elevator lift.



3 Way-Luxfer Ventilator

3 Way-Luxfer Ventilators

Light weight inexpensive steel ventilators with copper, bronze or aluminum spray finish as desired. Also made in extruded shapes of aluminum or bronze. Vents are made pivoted or bottom hinged in several different types to suit any condition and are so constructed that they are adapted to any type of setting. Certain types are carried in stock sizes while other types can be furnished in sizes required. Ventilators are obtainable through your store front or glass contractor. Complete details furnished upon request.

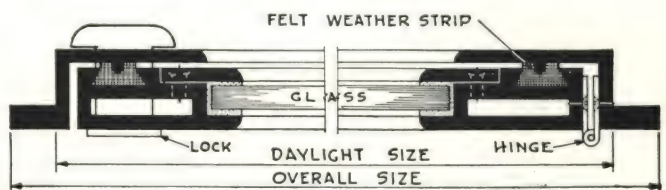
Specify 3 Way-Luxfer Ventilators.

Removable Flat Screens for Ventilators

Screens can be furnished for pivoted or bottom hinged ventilators. Unless otherwise specified screens are made of 16-mesh bronze, copper or aluminum wire cloth as the finish requires.

Show Case Doors

Show case doors are made of specially designed extruded shapes of either bronze or aluminum. A rigid outer frame welded at the joints supports the door and is adapted for setting in any type of store front construction and the weatherstripping provides an airtight and weatherproof door when closed. Furnished with cylinder locks, the doors are complete and ready for setting. Can be furnished in sizes to fit openings and details will be sent upon request.



Section Through Show Case Door

ALBERT GRAUER & COMPANY

Skylights, Structural Glass Roofs, Floors and Sidewalks

1408-1424 Seventeenth Street
DETROIT, MICH.

Products

GRAUER REINFORCED CONCRETE SIDEWALK LIGHTS, SKYLIGHTS, FLOOR LIGHTS, and MARQUISE LIGHTS constructed according to United States Simplified Practice Recommendation No. 49, installed in place or shipped in ready-to-set slabs.

Also Sidewalk Doors, Coalhole Covers and Rings, Sidewalk Ventilators, Hot and Cold Laid Industrial and Acidproof Asphalt Floors, Grauer-Watkins Red As-

Grauer

SKYLIGHTS
FLOOR LIGHTS
SIDEWALK LIGHTS
GRAUSTIC FLOORS
RED ASPHALT FLOORS

phalt, Graustic and Alcomastik Floors. Sidewalk Light and Skylight Repair Glasses of many shapes and sizes carried in stock for replacements.

Service

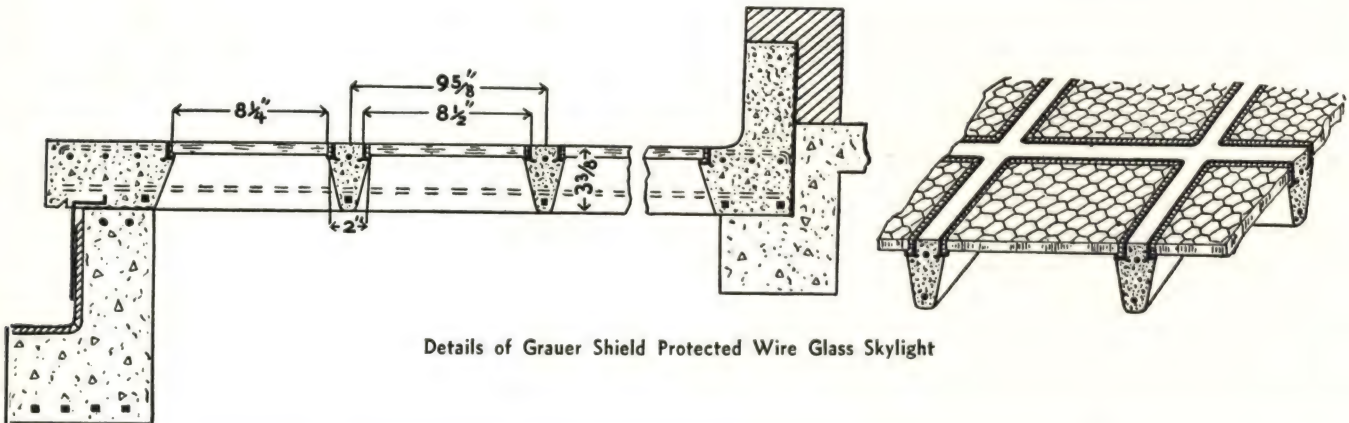
Installations made by our skilled mechanics anywhere. Complete detail drawings will be made for unusual lighting problems cheerfully and without obligation.

SKYLIGHTS (Transparent Roofing)

Grauer Skylights may be laid on curbs or may be set in rabbets flush with the roof. In either design metal flashing furnished and placed by the sheet metal contractor should extend over the bearing surface with an extension turned up as a combined fastening and water bar. The glass may be ribbed or rough rolled wire glass $\frac{7}{8}$ -in. thick or "Magnalite" obscuring-diffusing glass. The standard construction is designed to carry a uni-

formly distributed live load of 100 lbs. per sq. ft. on a clear span of 8 ft. 6 in. Expansion joints are formed of sheet copper filled with a high grade of elastic compound.

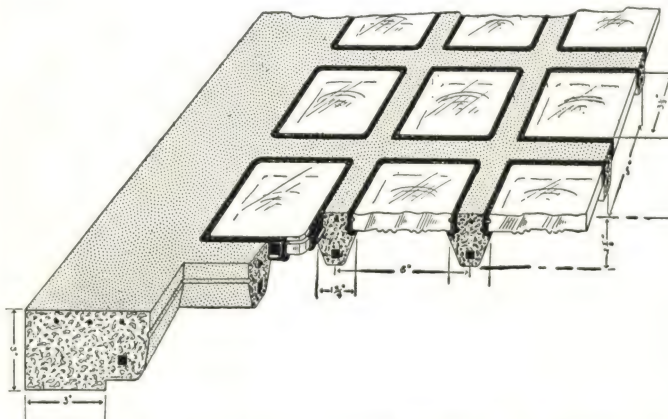
Specifications—Where shown on plans skylights are to be glazed with "Magnalite" Diffusing Glass, $\frac{1}{2}$ x8x8 ins. ("Transparent Roofing" $\frac{1}{8}$ x8 $\frac{1}{4}$ x8 $\frac{1}{4}$ ins. ribbed (rough) wire glass) set in hot dip galvanized cast iron shields with an elastic compound. All in accordance with manufacturer's details and United States Simplified Practice Recommendation No. 49.



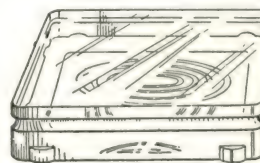
Details of Grauer Shield Protected Wire Glass Skylight

SIDEWALK LIGHT CONSTRUCTION

Specifications—The sidewalk lights shown on plans shall be constructed with carrying members of reinforced concrete. This glass shall be Grauer No. 20, set in rustproofed metal shields with an elastic compound. The design to permit glass replacement with unskilled labor. All glass is to be polariscope tested and guaranteed free of internal strains. The construction shall be capable of carrying a uniformly distributed live load of 300 lbs., per sq. ft. without injury. This construction to comply with U. S. Simplified Practice Recommendation No. 49.



Section Through Grauer Shield Protected Sidewalk Light Construction



Diffusing Glass No. 20
3 1/2 x 3 1/2 ins.



Protecting Shield

ESTABLISHED 1885

RICHARDS & KELLY MANUFACTURING CO.

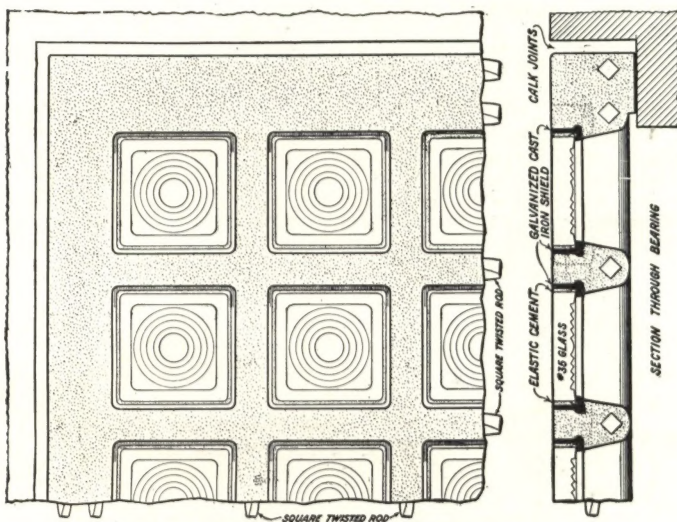
Manufacturers of Prismatic Lights
309-311 West Twenty-third Street, CHICAGO, ILL.

Products

REINFORCED CONCRETE SIDEWALK LIGHTS.
REINFORCED CONCRETE FLOOR LIGHTS.
REINFORCED CONCRETE ROOF LIGHTS.
CAST IRON SIDEWALK LIGHT REPAIRS and REPLACEMENTS.
SIDEWALK DOORS.
COALHOLE COVERS.

Glass

For Sidewalk Lights— $3\frac{1}{2} \times 3\frac{1}{2}$ in. in *galvanized cast iron shields*; 3-in. diameter in *galvanized cast iron shields*.



Detail Showing Galvanized Cast Iron Shield Protected Glass

For Floor Lights— $3\frac{1}{2} \times 3\frac{1}{2}$ in. in *galvanized cast iron shields*; 4x4 in. and $6\frac{1}{8} \times 6\frac{1}{8}$ in. without shields.

For Roof Lights— $8\frac{1}{4} \times 8\frac{1}{4}$ in. wire glass set in *galvanized cast iron shields*.

Guarantee—We will furnish free of charge f.o.b. our factory any glass broken in our *galvanized cast iron shield* types of construction for a period of five years from date of installation, unless breakage is caused by fire or misuse.

Reinforced Concrete Sidewalk, Floor and Roof Lights

Manufactured in accordance with simplified practice recommendations adopted at Washington, D. C., November 18, 1925, by Sidewalk, Floor and Roof Light manufacturers, distributors and users, acting in conjunction with the Division of Simplified Practice.

Cast Iron Sidewalk Lights

We have discontinued furnishing cast iron sidewalk lights for new installations, but have patterns and glass for repairs and replacements.

Glass—For concrete setting $2\frac{1}{2}$ and 3 in. in diameters, 3 in. square, $2\frac{1}{2} \times 3\frac{1}{2}$ in.

For sulphur setting $1\frac{5}{8}$ in. in diameter.

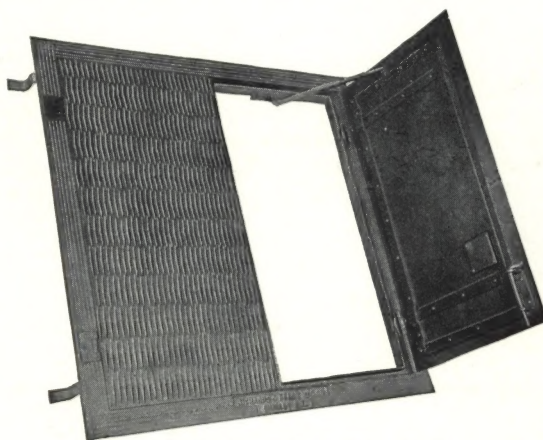
Sidewalk Doors

Manufactured in flush or raised types with checkered steel plate door leaves.

Illuminating doors made in either flush or raised type with 3 in. square glass set in checkered steel plate door leaves.

All doors are fitted with brass hinges, device to hold doors while open, slide bolt to lock from below and anchors to build into concrete. Door leaves can be fitted with striker plates if doors are operated with arch on car platform.

Flush type door frames made either of one piece iron castings or welded steel channel frames with gutter tapped for $\frac{3}{4}$ in. pipe to carry off water which seeps through joints between doors and frames.

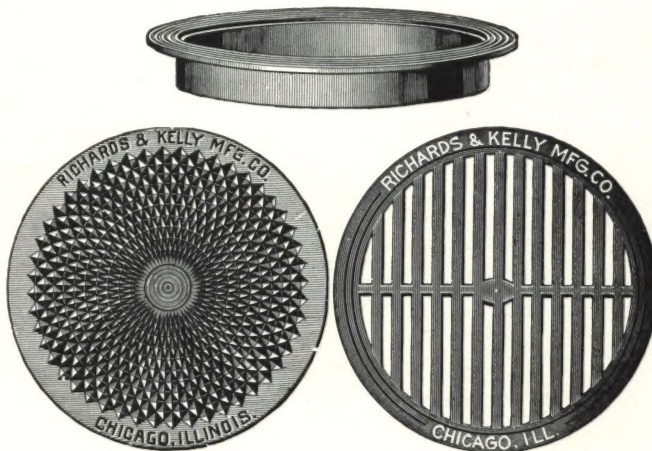


Flush Type Checkered Steel Sidewalk Door

Coalhole Covers and Frames

Sidewalk Type Stock Sizes—16, 18, 20, 24 and 30 in., with or without glass. Special sizes 26, 28 and 36 in.

Driveway Type Stock Sizes—20, 24 and 30-in. diameter; 20x20, 24x24 and 30x30 in.



Quotations and Details

Furnished promptly upon request, prices on sidewalk, floor or roof lights, given either f.o.b. cars or installed at building.

J. MERRILL RICHARDS

Richards' "New Unity" Skylights, Glass Roofs and Floors
119-122 West First Street, BOSTON, MASS.

TELEPHONE
Sou. B. 1667

REPRESENTATIVES

WASHINGTON, D. C., Arthur B. Gilbert, 1427 Eye Street, N. W.
RICHMOND, VA., J. S. Archer, 205 E. Canal Street

PORTLAND, ME., W. O. Hutchins, 178 Middle Street
ATLANTA, GA., Builders Specialties Co., 526 Forest Avenue

Products

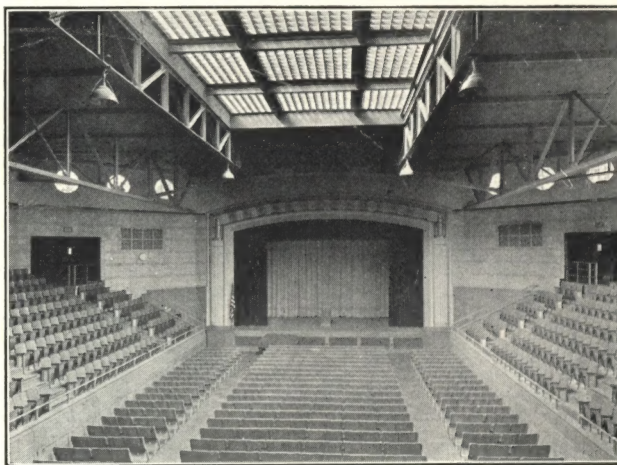
RICHARDS' "NEW UNITY" SKYLIGHTS, Types WF and ST.
Also Floor Lights, Sidewalk Lights and Glass and Concrete
Skylights.

For Magnalite Obscuring Diffusing Sheet Glass see Products
Index for Glass (Obscuring-Diffusing).

CONSTRUCTION AND USES OF "NEW UNITY" HORIZONTAL SKYLIGHTS

"New Unity" Skylight Constructions

"New Unity" Skylight Constructions do not depend on concrete for watertightness since no concrete is exposed to the weathering surfaces. Magnalite Diffusing Tiles or heavy ribbed wire glass units are placed into shields or spacers anchored in the supporting grid of reinforced concrete and glazed with a watertight tar and sulphur compound. The constructions are so designed that no concrete is exposed on top between the lights of glass. Reglets are provided in the concrete borders to receive the roofer's flashings so that no concrete is exposed to the weathering surfaces in the entire skylight construction.



Magnalite Diffusing Tile Installation, Hovey Institute, Waltham, Mass.

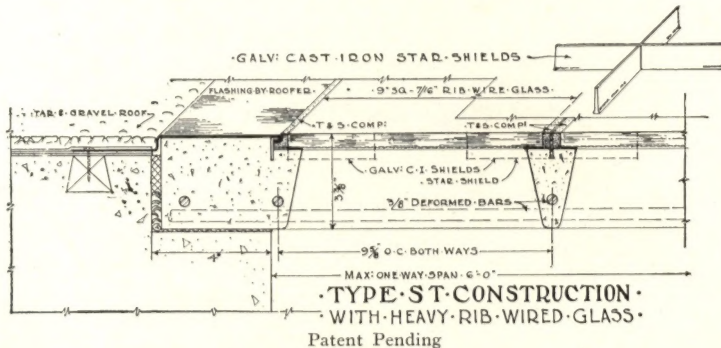
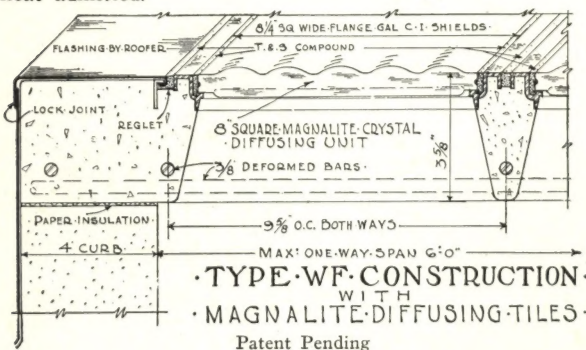
DANIEL W. GIBBS AND KILHAM, HOPKINS & GREELEY ASSOC.
Note even distribution of sunlight

Feature—Magnalite Crystal Diffusing Tiles

The "Four-Way" light diffusing principle of Magnalite Diffusing Glass (see Products Index for Glass) is available in "New Unity" Skylights, Type WF. Magnalite Tiles will eliminate excessive interior sun glare and concentrated sun rays by spreading light of equal intensity over large areas beneath, the same shape as the skylight opening.

*Shadows Reduced to a Minimum—Soffit Highly Ornamental.
Excellent Interior Vision—Self-cleaning Top Surface.
Heat Diffusion.*

Skylight openings glazed with Magnalite Tiles will produce better interior vision than larger ones glazed with ordinary glass. Skylight areas can be reduced without sacrificing daylighting results—a saving in Winter heat losses, and less Summer heat admitted.



Specifications

Richards' "New Unity" Glass and Reinforced Concrete Skylights having no concrete exposed to the weathering surfaces in the entire construction. The glass shall be Magnalite Diffusing Tiles installed in Type WF construction (or ribbed wire glass, 1/8 in. thick in its least section, installed in Type ST construction). Reglets shall be left in the borders to receive roofer's flashings where required.

Copies of Federal and suggested P.W.A. specifications will be mailed on request.

Guarantee

Materials and workmanship are fully guaranteed in writing for each installation.

Where to Use Richards' "New Unity" Skylights

Architectural designs can be improved by the use of "New Unity" Skylights in *Interior Courts, Set Backs*, and on *Roofs* where steeply pitched skylights would be objectionably visible on the skyline.

Installation

Richards' "New Unity" Skylights are installed in place by mechanics skilled in the art.

Standard Shielded Constructions (Round and Square Glass)

For sidewalk lights, also 6 1/4-in. square unshielded units for interior floor lights.

PARTIAL LIST OF RICHARDS' SKYLIGHT INSTALLATIONS

INSTALLATION
*Melrose High School, Melrose, Mass.
*Christian Science Publishing Society Building, Boston, Mass.
Harvard Indoor Athletic Building, Cambridge, Mass.
Harvard Business Administration School, Cambridge, Mass.
*Norfolk Prison Colony, Norfolk, Mass.

ARCHITECT
J. Williams Beal Sons
Chester Lindsay Churchill
Coolidge, Shepley, Bulfinch & Abbott
McKim, Mead & White
McLaughlin & Burr

INSTALLATION
†El. Vocational School, Somerville, Mass.
*U. S. Post Office, Quincy, Mass.
*Lynn Highland Elementary School, Lynn, Mass.
Albany Savings Bank, Albany, N. Y.
Seaside Hotel, Atlantic City, N. J.
Sweet Briar College, Sweet Briar, Va.
Enoch Pratt Library, Baltimore, Md.
Middletown Savings Bank, Middletown, Conn.
Archives Building, Washington, D. C.
Department of Agriculture, Washington, D. C.

ARCHITECT
John P. Heffernan
Parker, Thomas & Rice
George A. Cornet
Henry Ives Cobb, Jr.
Cook & Blount
Cram & Ferguson
Friz & Friz
Hopkins & Dentz
J. Russell Pope
Rankin & Kellogg

*Magnalite Tile Installations. †Type WF. ‡Type ST.

